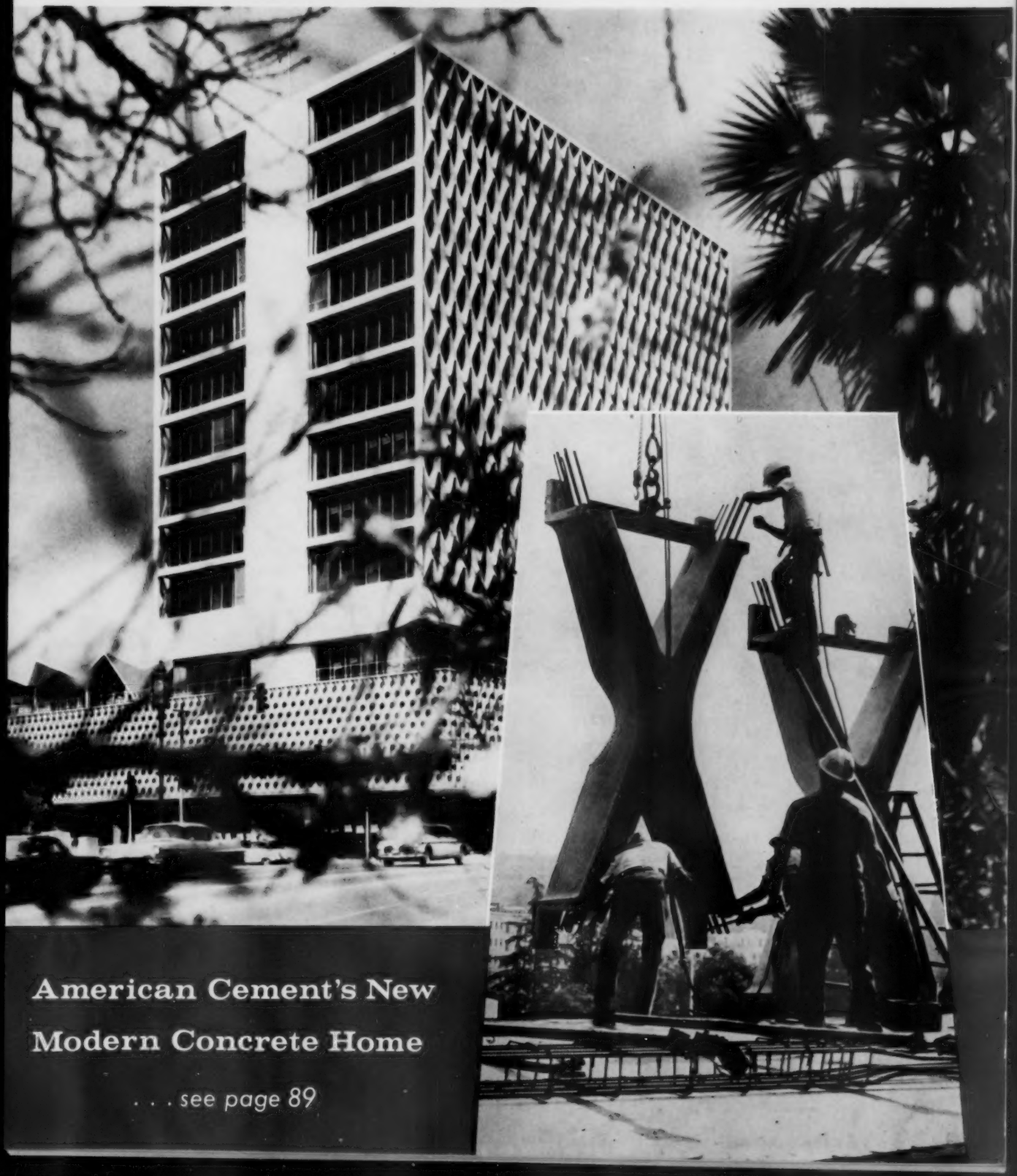
# pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

CEMENT, SAND AND GRAVEL, CRUSHED STONE, SLAG, LIME, GYPSUM AND OTHER NONMETALLIC MINERALS

september 1961



## American Cement's New Modern Concrete Home

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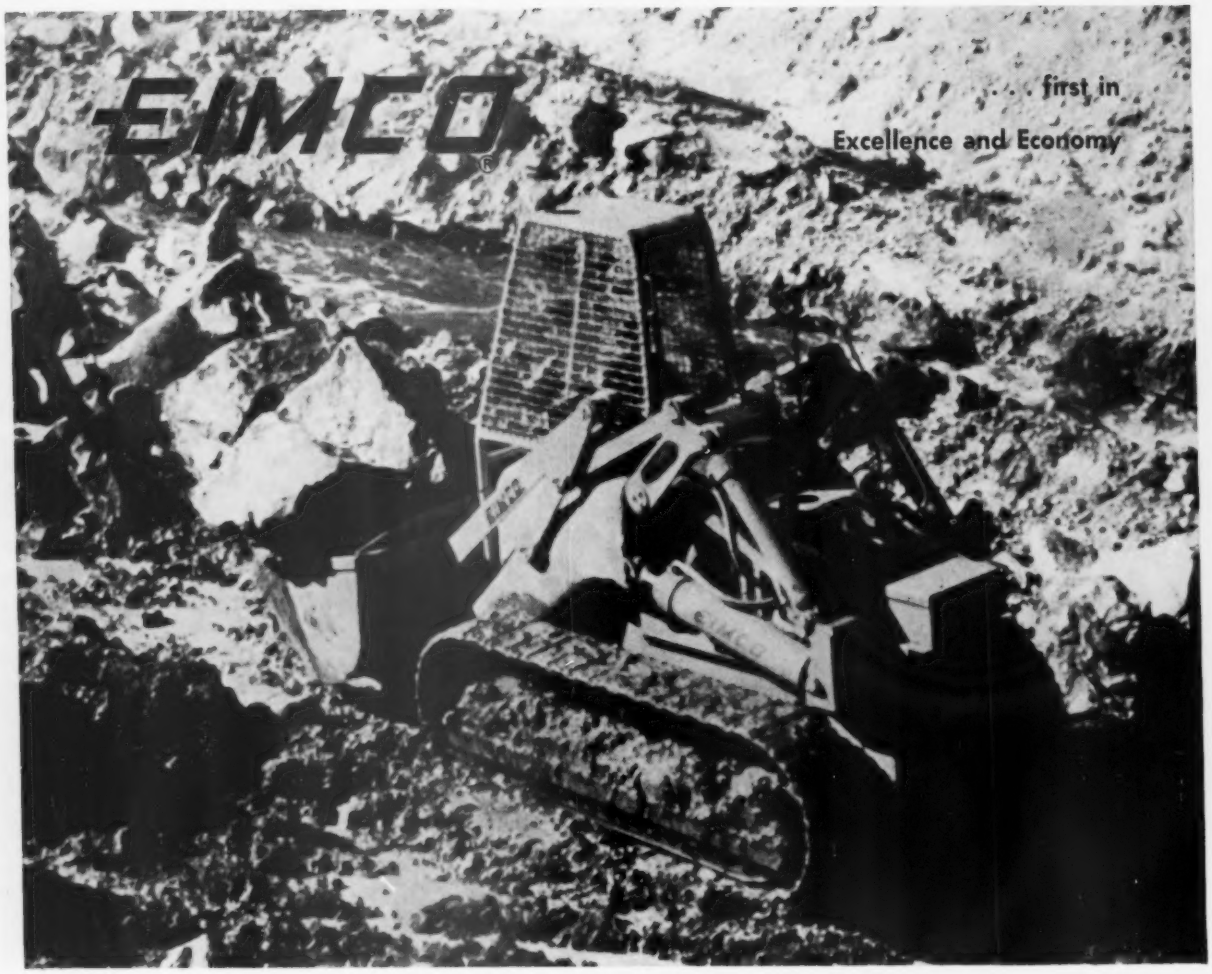


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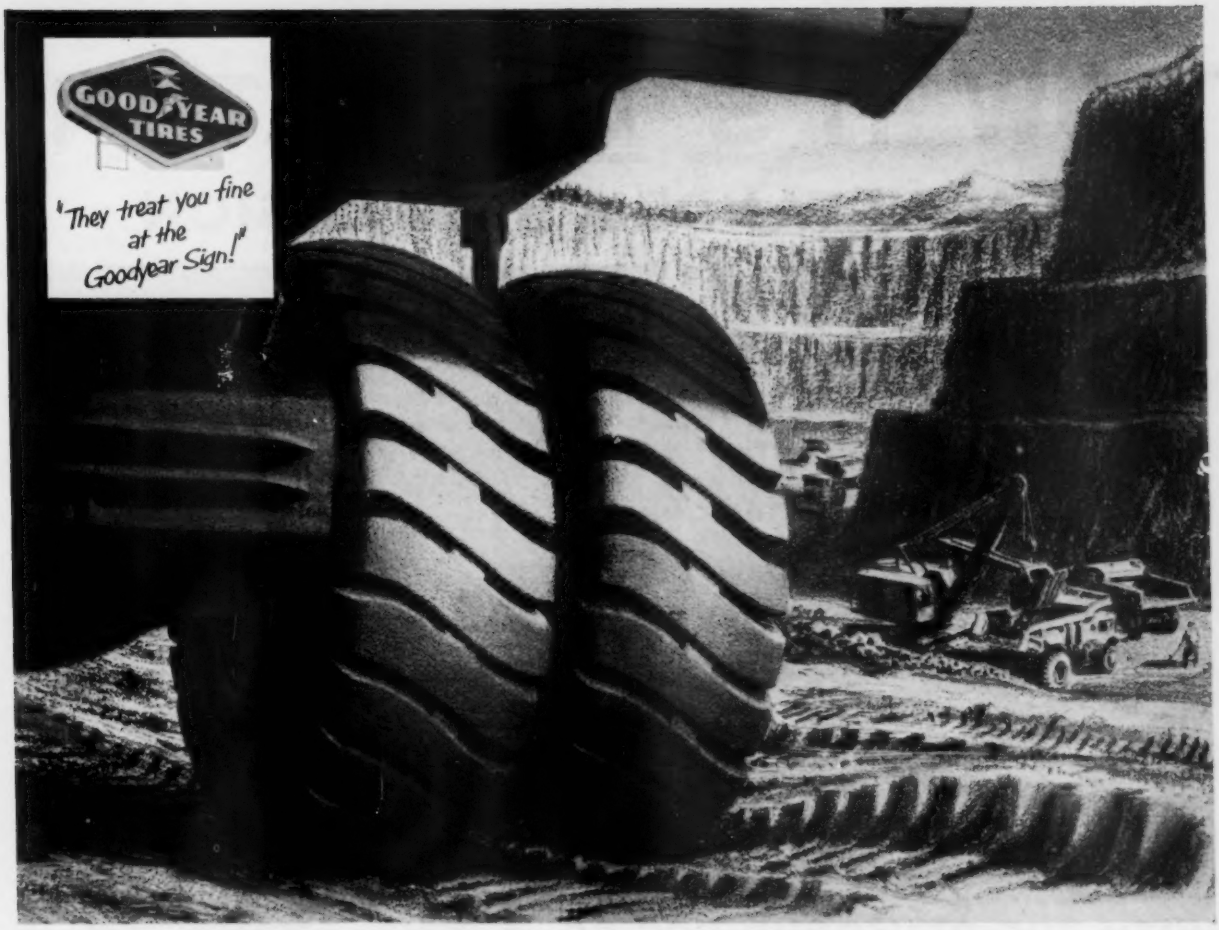


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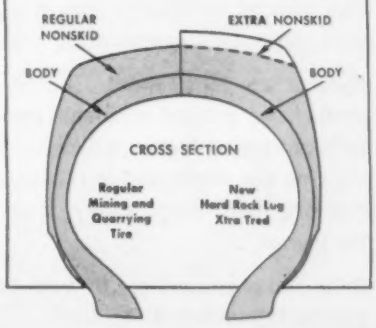


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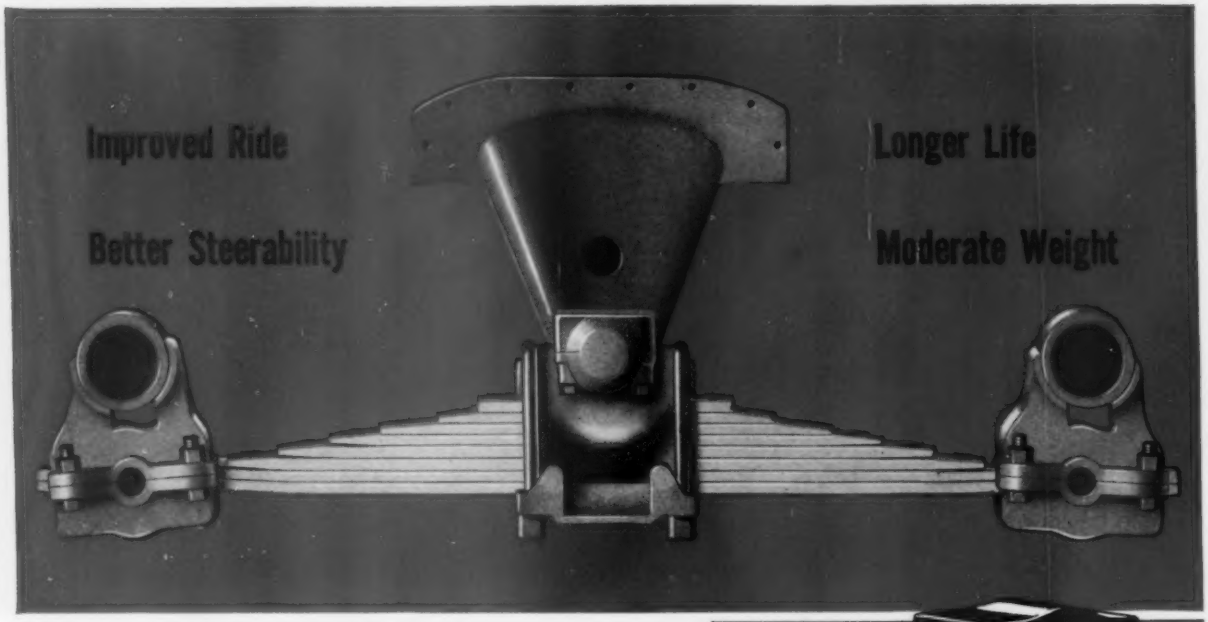


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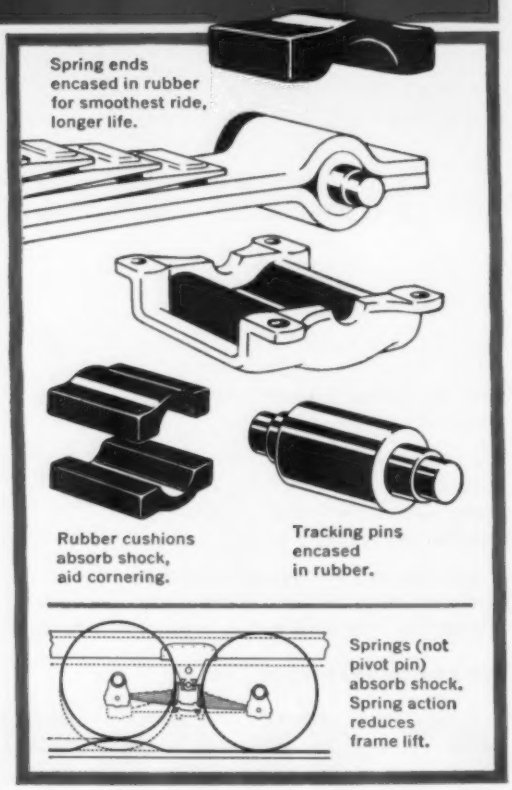
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SEPTEMBER 1961
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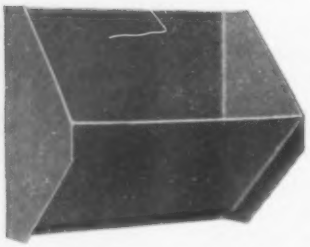

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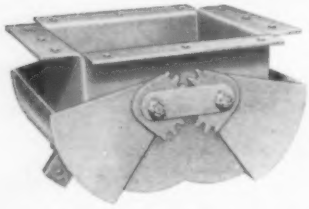

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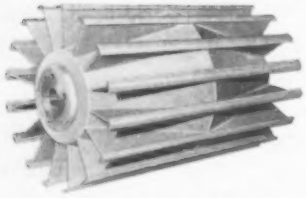

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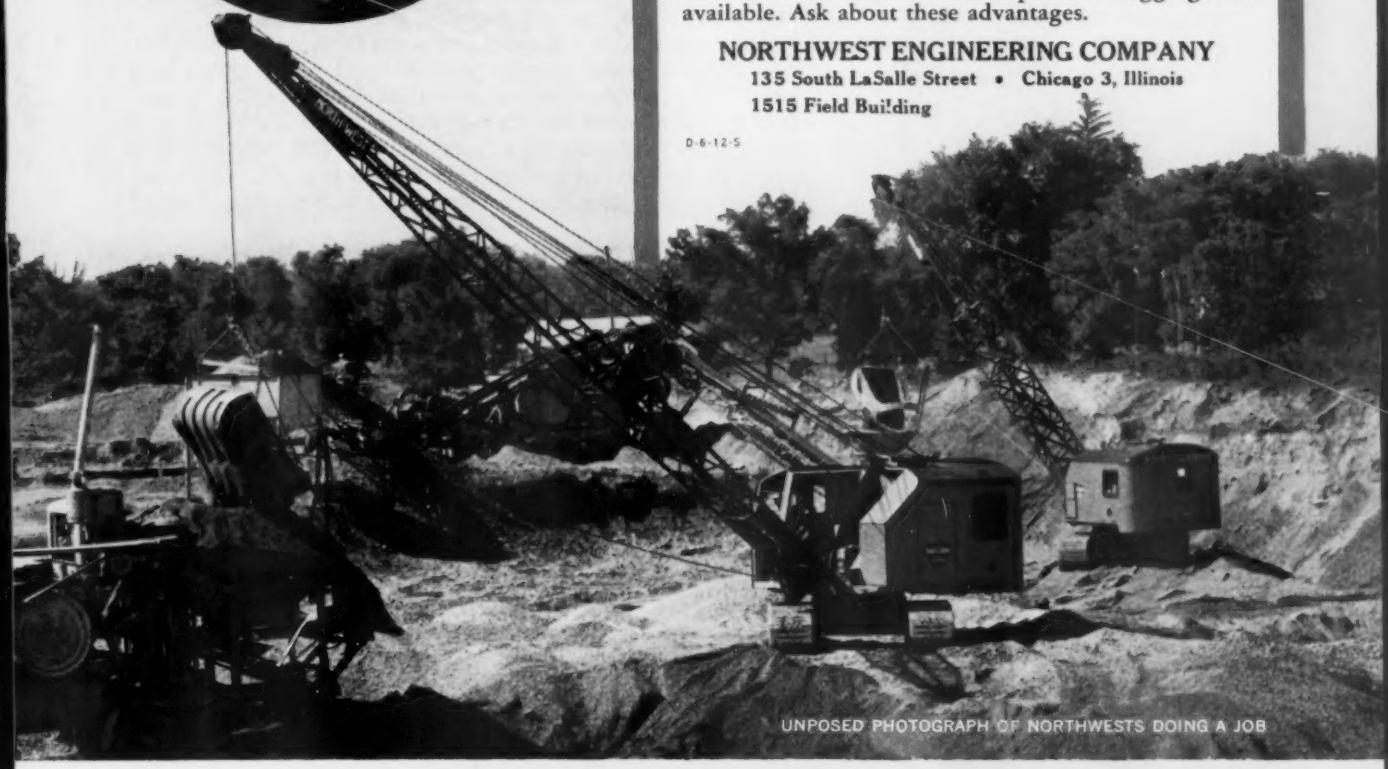

UNPOSED PHOTOGRAPH OF NORTHWESTS DOING A JOB

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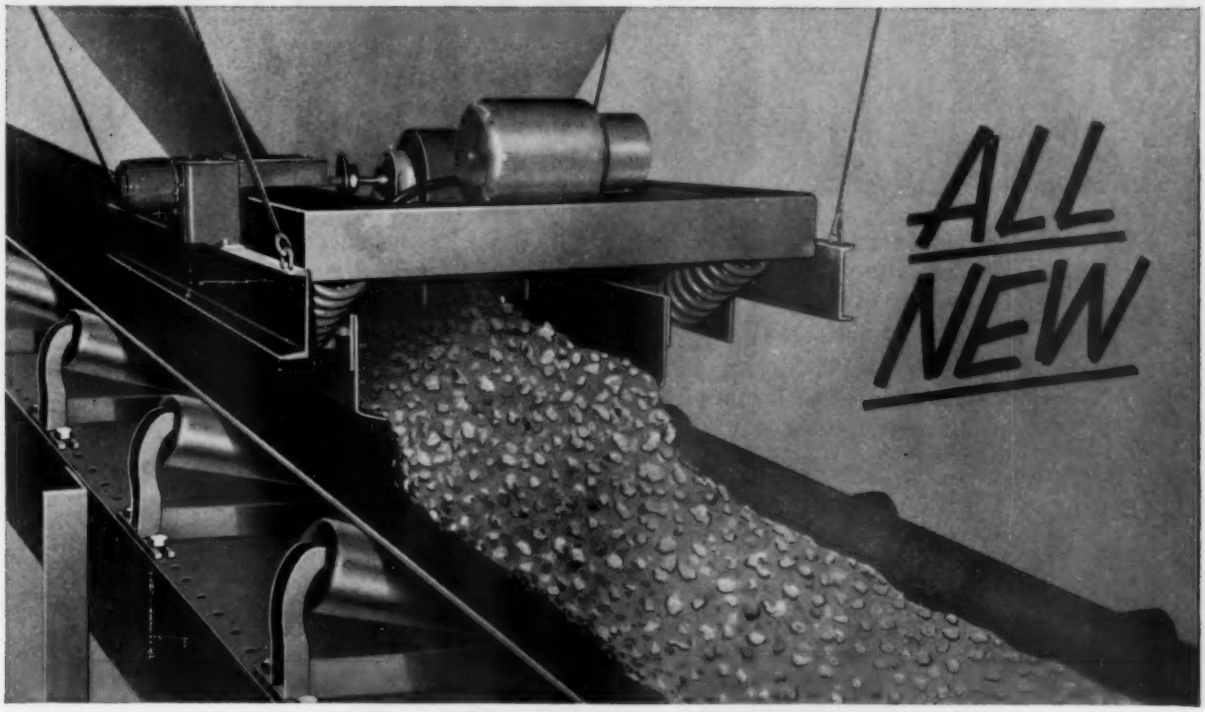


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- **Operator comfort, extra safety factors and the utter simplicity of control provide additional bonus benefits. Matchless work visibility too, adds to operator productivity.**
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**ASK FOR A DEMONSTRATION NOW!**

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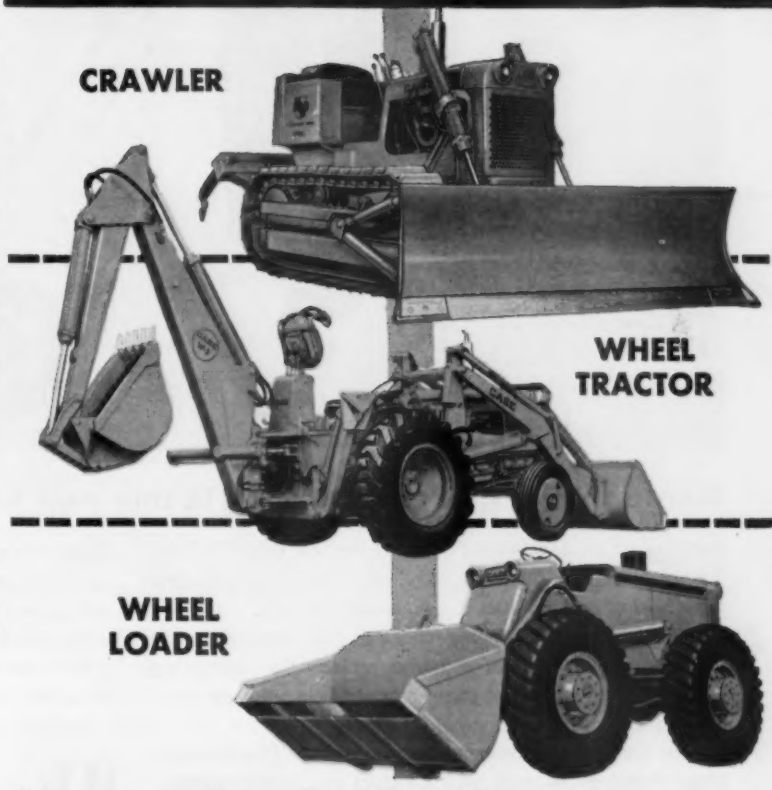


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# Washington News Letter

By S. HERBERT UNTERBERGER

THE Administration is currently going through a tightening up process which may well be the forerunner of a shaking down. The turning point came with the Cuban fiasco, which by now is recognized to have been more the consequence of loose administration which prevented the making of sound judgments than of erroneous judgments having been made.

Although that error was costly, principally in prestige, it may turn out to have been a blessing that it occurred so early in the new President's term. It is quite obvious that he is determined never again to become the victim of "sloppy" staff work. What is more important, he appears to be doing something about avoiding recurrences of such situations.

Mr. Kennedy has not tried to expiate the sins by the simple process of firing the people who were responsible for them. On this he differs from the President with whom he is most often compared, Franklin D. Roosevelt. He has learned that competent men are not equally competent in all areas. Thus, creative men and idea men may neither have the soundest judgments nor be the best administrators.

The idea men—McGeorge Bundy, Walt Rostow, Arthur Schlesinger Jr., and Walter Heller—are still there, but they are being assigned to what they can do best, to make investigations and come up with suggestions. They no longer have the authority to pass on the soundness of their own or one another's suggestions nor to put them into effect. That is now being done by others more skilled and experienced in these matters.

This partially accounts for the fact that the names which are prominent in the news are changing. Of equal importance is the fact that events are forcing the President to make hard decisions. And, like everyone faced with that problem, he finds himself more inclined to listen to persons with experience than to Washington neophytes, no matter how articulate they may be.

Considering that the Administration's most serious error was made in the area of military affairs, it is not surprising that the President is turning to General Maxwell Taylor for his advice on the far more serious Berlin crisis. As an experienced professional, General Taylor knows where to get other reliable experienced professional judgments. The fact that General Taylor is regarded as a conservative worries some of the amateur military strategists around the Administration who, because of their ignorance, are frequently more willing than he to take long risks. His move into the White House is also likely to worry some of the civilian advisors and staff who until recently had the advantage of proximity to the President.

Since foreign policy, particularly facing the strength of the Soviet Union, is the President's most serious problem, it is logical that he should turn for advice to Dean Acheson, former Secretary of State, who has probably had the most experience in dealing with the Russians of any American.

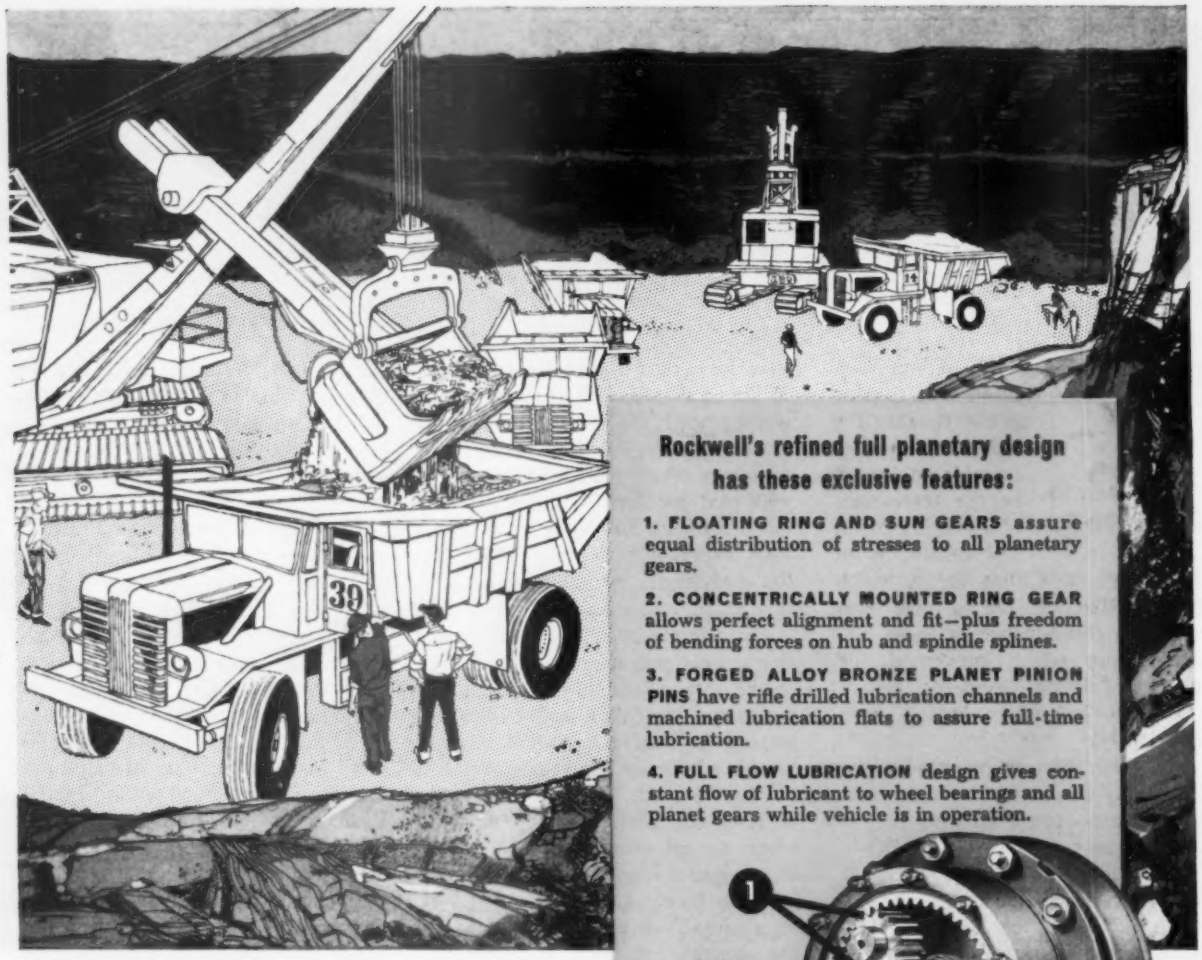
Fortunately, Dean Acheson and Dean Rusk, the current Secretary of State, see almost eye to eye on policy matters. They, too, are relatively conservative. In foreign policy matters, this means continuing reliance on the alliances which the United States has maintained for many years, which have stood the test of time. This is not to say that they are opposed to the efforts of others, such as Chester Bowles and G. Mennen Williams, in building up new relationships with new allies, particularly among the newly created states, but not at the expense of weakening the old reasonably reliable ties.

President Kennedy's most serious problem in domestic affairs is financial—how to pay for the expanded programs which Congress has already approved, plus those for which he is still asking approval. The President is turning increasingly to his Secretary of the Treasury, Douglas Dillon, as this official is an old hand in these matters, having been concerned with fiscal affairs in the Eisenhower Administration. As is true of the others, he also tends toward conservatism.

It should not be concluded that the conservatives have captured the President. Indeed, in this very area of fiscal affairs, the liberals' influence on policy is substantial; and their view is the one which prevails currently. The liberals, as exemplified by Chairman Walter Heller of the Council of Economic Advisors, have so far convinced the President and his Administration that, despite the large increase in government expenditures, no rise in federal income taxes is required to balance the budget. They reason that the economic recovery just beginning will generate an increase in government income large enough to cover the increased outlay.

Insofar as future years are concerned, they point out that if the President is successful in increasing the rate of economic growth by 3½ to 4½ percent a year, this, too, will generate enough additional federal revenue to offset future increases in expenditure. For this analysis, they have developed a number of economic models. Their mathematics is probably unimpeachable. The only problem is that the assump-

*(Concluded on page 76)*



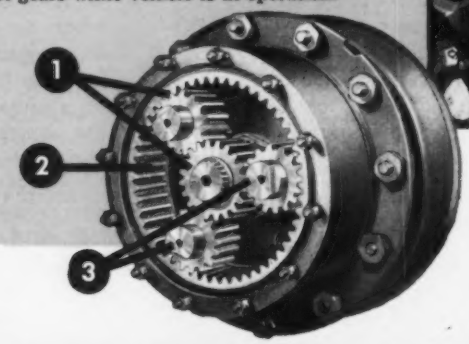

**Rockwell's refined full planetary design has these exclusive features:**

1. **FLOATING RING AND SUN GEARS** assure equal distribution of stresses to all planetary gears.

2. **CONCENTRICALLY MOUNTED RING GEAR** allows perfect alignment and fit—plus freedom of bending forces on hub and spindle splines.

3. **FORGED ALLOY BRONZE PLANET PINION PINS** have rifle drilled lubrication channels and machined lubrication flats to assure full-time lubrication.

4. **FULL FLOW LUBRICATION** design gives constant flow of lubricant to wheel bearings and all planet gears while vehicle is in operation.




## ROCKWELL-STANDARD PLANETARY AXLES

# BEST DRIVE FOR THE HEAVYWEIGHTS!"

Here's new rugged dependability for prime movers, four-wheel tractors, heavy off-road wagons, mining and agricultural equipment, and many other heavy-duty applications. Rockwell-Standard's complete line of planetary axles are available in capacities up to 150,000 pounds. And to meet every job need, there is a planetary steering axle operationally matched to each rigid planetary in the line.

The large reductions possible with Rockwell's full planetary, double-reduction axles enable them to ideally perform most heavy-duty off-highway operations. Because the substantial planetary reduction is located in the wheel hub, axle shafts and first reduction gears carry only nominal torsional loads—give long trouble-free service. For the best heavyweight drive, specify Rockwell-Standard.

*Another Product of...* **ROCKWELL-STANDARD CORPORATION**

Transmission and Axle Division, Detroit 32, Michigan

# Labor Developments

WITH the recent publication of its Rules and Regulations, the program of the President's Committee on Equal Employment Opportunity, of which Vice President Lyndon Johnson is chairman, has gone into full swing. To guarantee equal access to employment with all employers who do business with the Federal Government, it has been ordered that in every contract which an employer makes with the government, he must agree, among other things, that:

1. He will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin.

2. He will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin, at least with respect to: (a) employment, upgrading, demotion, or transfer; (b) recruitment or recruitment advertising; (c) lay-off or termination; (d) rates of pay or other forms of compensation; and (e) selection for training, including apprenticeship.

3. He will, in all solicitations or advertisements for employees placed by him or on his behalf, state that all qualified applicants will receive consideration without regard to race, creed, color, or national origin.

4. He will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, advising them of his commitments and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

5. He will furnish all required information and reports and will permit access to his books, records, and accounts for purposes of investigation to ascertain compliance.

**By S. HERBERT UNTERBERGER**

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations
Washington, D.C.-Philadelphia, Pa.

Furthermore, in the event of noncompliance, he is required to agree in advance that (1) the contract may be cancelled in whole or in part; (2) he may be declared ineligible for further government contracts; and (3) he may be subjected to a number of other sanctions, some of which have not yet been announced.

A contract containing these rather severe provisions must be signed not only by the prime contractor, that is, the one holding a contract with the government, but also with each "first tier subcontractor," that is, one holding a contract with a government prime contractor calling for supplies or services required for the performance of a government prime contract.

The only exceptions are for contracts, subcontracts, purchase orders, and other transactions not exceeding $10,000; those requiring work to be performed outside the United States and involving no recruitment of workers within the United States; or contracts for the purchase of standard commercial supplies and raw material. The executive vice-president of the committee, Jerry R. Holleman, an assistant secretary of labor, has the power to withdraw the exemption for specific standard commercial supplies and raw materials when he finds that is necessary to achieve the purposes of the program. He is also empowered to exempt any particular contract when he deems that special circumstances in the national interest require this.

The promulgation of these regulations places the burden upon prime contractors to file compliance reports with the contracting agency within 3 days of the award of the contract. In addition, the prime contractor is charged with the responsibility not only of filing his own report but of seeing to it that each first tier subcontractor files a report with him within 30 days of the making of such a subcontract and of promptly forwarding that report to the contracting agency.

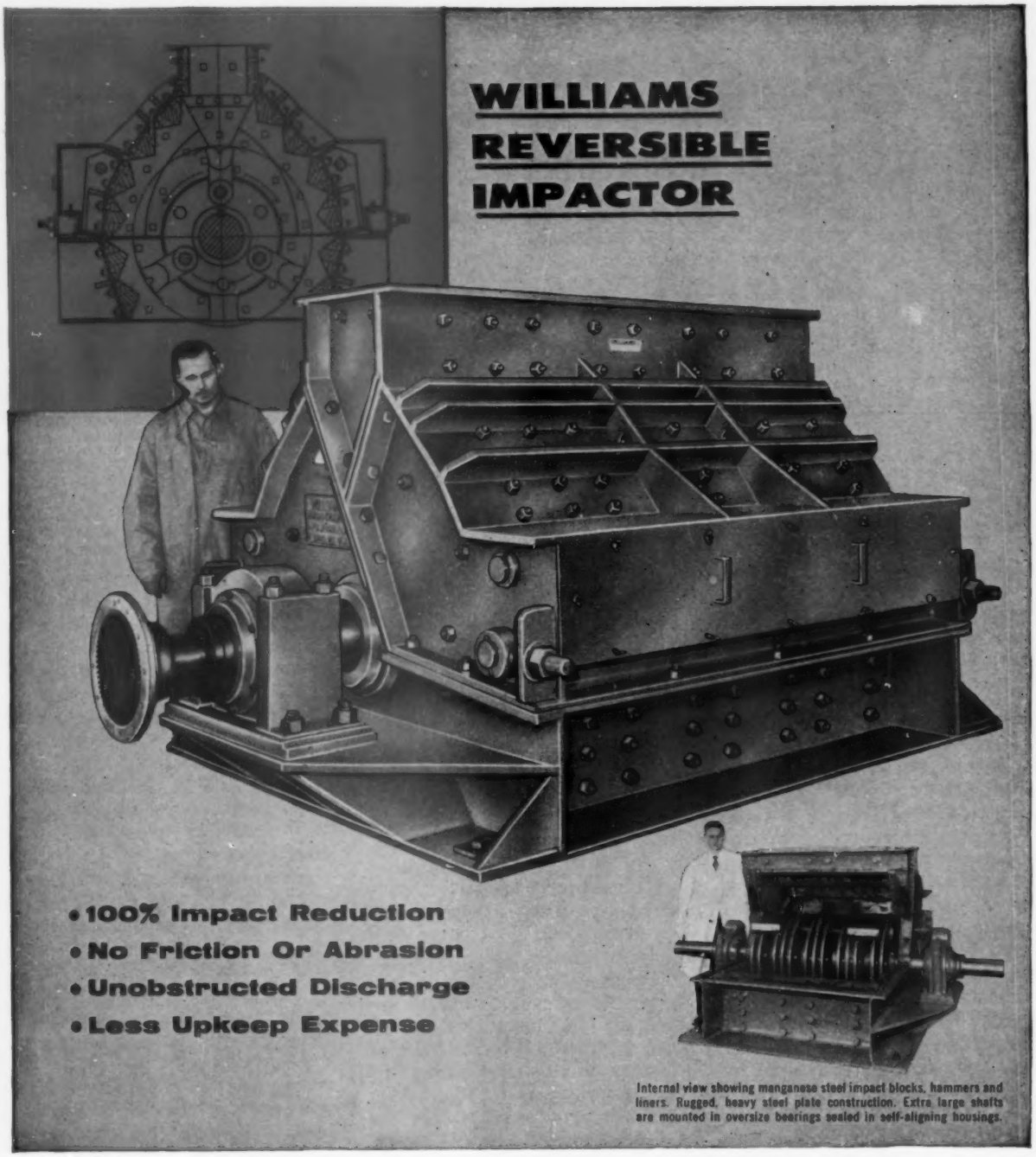
Not only must those reports show the extent of employer compliance with the requirements agreed upon; but whenever the contractor or subcontractor has a collective bargaining agreement or understanding with a labor union or other representative of employees, information must be furnished as to the labor union's or representative's practice and policies concerning compliance. The employer is supposed to get this information by requesting it. If the request is refused, the employer must certify that fact in his report and set forth what efforts he has made to obtain the information.

This indirect and rather clumsy method for obtaining information about the practices of labor unions results from constitutional limitations under which the committee's power to deal with unions is severely limited. The most that the committee can do directly is to hold hearings and thereby publicly expose the unions' discriminatory practices.

Once an employer has filed a compliance report, it may be used in connection with other contracts, although the contracting agency may require more recent reports, if it is considered necessary. Furthermore, a compliance report may be required of any bidder or prospective contractor prior to the award of a contract; and when a contract is awarded to a prime contractor, informa-

*(Concluded on page 76)*

# WILLIAMS REVERSIBLE IMPACTOR



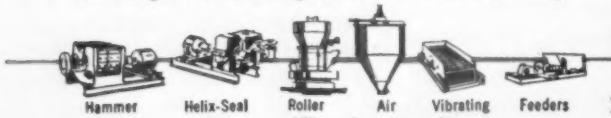
- 100% Impact Reduction
- No Friction Or Abrasion
- Unobstructed Discharge
- Less Upkeep Expense

Internal view showing manganese steel impact blocks, hammers and liners. Rugged, heavy steel plate construction. Extra large shafts are mounted in oversize bearings sealed in self-aligning housings.

## Unequalled For Secondary Grinding

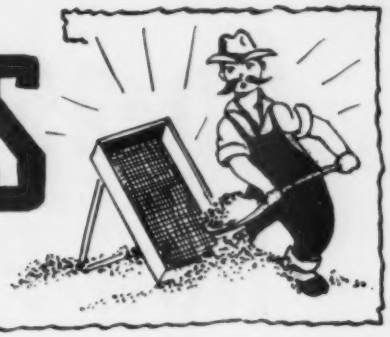
Reduces limestone and material of similar hardness to 1½", ¾" or smaller. Properly adjusted, the Williams Impactor makes excellent material with the proper percentage of fines for road base course. Unusually low upkeep expense as reduction is 100% by impact. Material is fed to enter between the hammers and is thrown against the impact blocks setting up a repeated ricochet action which accomplishes the reduction. Adjustable impact blocks adjust for wear. A reversing switch on motor permits rotating hammers in either direction, to the left today and to the right tomorrow, thereby giving double hammer life. No grates are used. Entire bottom is open permitting unobstructed discharge of crushed material and less wear and tear. A size for every job. Let us tell you about one for your use.

**WILLIAMS PATENT CRUSHER & PULVERIZER CO.**
802 St. Louis Avenue — St. Louis 6, Mo.




**WILLIAMS**
CRUSHERS · GRINDERS · SHREDDERS
*Oldest and Largest Manufacturers of Hammer Mills in the World*

# SCREENINGS



**By RAY L. SMITH JR.**

FAT, HAPPY and self-satisfied Americans who have been lulled to believe this country leads the world militarily need read only two books to get rid of this ridiculous idea.

If the good American reads nothing more than sports and comic pages for the rest of the year, he owes it to himself to read "The Ugly American." The thin volume can easily be digested in two nights.

He won't like what he sees in Ugly American. Foreign policy blunders, pompous representatives and a seemingly never ending array of errors is enough to sicken the thinking man to his stomach.

A second required book to brush away that lethargic "we're better than anyone" feeling is Major Alexander P. de Seversky's "America—Too Young To Die."

de Seversky is a learned man. His language is cutting. He spares no feelings in a non-partisan view of this country's so-called race with Russia.

Not only does this distinguished military leader and aircraft pioneer point to past errors, he has the boldness to tell what Americans can do to better a bad situation.

The complacent American isn't likely to sleep too well after consuming de Seversky's literary fare. It's altogether possible the reader will bring upon himself some restless nights. The cold job of truth sometimes has this effect.

"Ugly American" is available in paperback form at nominal cost. "America—Too Young To Die" is still running in some daily newspapers serial-style.

Neither book is for the escapist . . . the faint of heart.

**Potpourri and Succotash**

Two Indians watched the white men building a lighthouse. One night after it was completed, the Indians took up their accustomed stations as a thick fog started to roll in.

"Ugh," said one Indian to the other, "light shine, bell ring, horn blow, but fog come in just the same."

It's silly to fuss about getting old—when we stop growing older, we're dead.

We can learn something from the parrot, which is content to repeat what it hears without making a good story out of it.

One time a man doesn't call a spade just simply a plain spade is when he trips over one in the dark.

A man, shopping around for a used car, stopped in front of one that was marked $774.31. He turned to the salesman with a smile and asked, "How did you get such an odd figure?"

"Oh," was the disgusted reply, "it's because I can't stop nibbling between meals."

"They had to shoot poor Fido today."

"Was he mad?"

"He wasn't any too pleased."

I believe in getting into hot water—it keeps you clean.

The schoolteacher was explaining planets and comets to her young class.

"Now, Johnny," she asked one young student, "what do you call a star with a tail?"

"Mickey Mouse!" was the prompt reply.

The sergeant of a new company of recruits stuck his head in the barracks.

"Any of you guys good at shorthand?" he asked.

Four men stepped forward.

"O.K.," snapped the sergeant. "Report to the mess hall right away—they're short-handed."

A young farmer was applying for a job in the city. After filling out the main items of the application form, he came to a space for "remarks." He chewed on his pencil thoughtfully for a few minutes, then spelled out: "It's a real purty day."

Compliments are like perfume—they should be inhaled, not swallowed.

A clerk in an airline office in Los Angeles recently answered the phone and heard a thick, drunken voice say:

"Wouldja pleash tell me how much it costs to fly to San Diego?"

"Twelve dollars, sir," replied the girl.

"O. K.—just a minute, operator," answered the tipsy one.

Suddenly there came a series of heavy and light rings as the caller, blissfully unaware of the girl's protests, dutifully dropped the money in the pay telephone slot.

An Englishman on his first visit to our shores chanced into a soda shop where a rock-and-roll session was in full swing. After watching several couples dance for a few moments, he turned to a man sitting on the next stool and asked:

"They do get married afterward, don't they?"

Most folks have presence of mind. The trouble is absence of thought.

Customer: "Have you a book called, 'Man, Master of the Home'?"

Salesgirl: "Try the fiction department, please."

# TD-25 outproduces '24' New Power advantages high-walling—*for Morris Enterprises,*

# by 20%... speed

**Owensboro, Ky.**

**"The new International TD-25** is giving us about 20% more production than our TD-24," states Paul H. Morris, owner of Morris Enterprises, Owensboro, Kentucky. "The '25's' DT-817 turbocharged Diesel is snappy, doesn't lug down, and has the power to carry full loads without hesitation.

"I particularly like my '25's' Planet Power steering and Hi-Lo power-shifting advantages for high-wall cutting—and the good balance, which enables backing up steep grades and starting the push immediately.

"My TD-24 has clocked better than 10,000 production hours in four years, with outstanding service and very low downtime."

## Full-cut benching—full time

Apply full power to the job—maintain full speed—keep the blade loaded full time—benching or high-walling with the International TD-25. You simply operate the bankside track in high speed range, the other in low speed range—for full-capacity straight ahead performance, without "fish-tailing" or "bank-nosing."

You make full-load, full-power turns with TD-25 "live-track" Planet Power steering. And with combined Hi-Lo power shifting, you get instant up-or-down matching of power to condition. You eliminate "dead-track drag" and "gear-shift" lag—and benefit accordingly.

**See how the 230-hp TD-25** outproduces king-sized clutch-steered rigs by up to 50%, or more—clearing land, removing overburden, highwalling, and benching. Compare DT-817 turbocharged Diesel wallop—measure how dual-valving insures "free breathing" for clean combustion and big work capacity at all altitudes. Let your International Construction Equipment Distributor demonstrate.

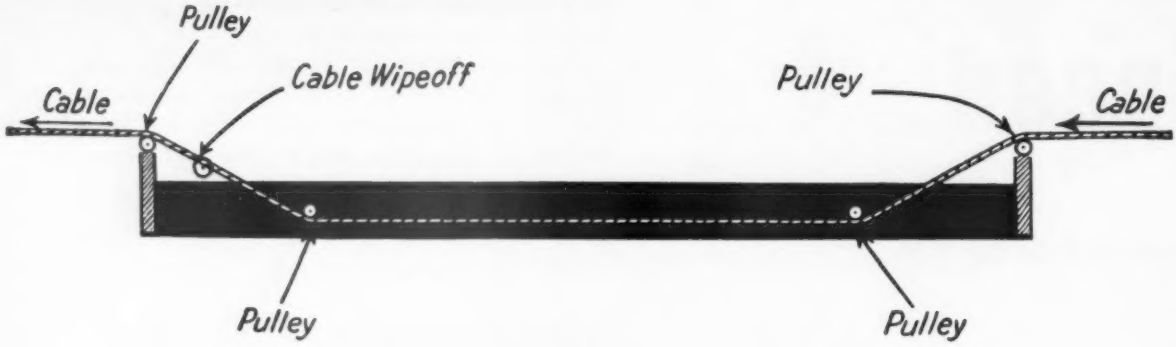
**"Slugging" straight ahead** with an offset load of shot rock, this TD-25, belonging to Morris Enterprises, demonstrates the capacity-adding Planet Power steering principle. Operator keeps bank-side track in high range, leaves other in low range, to stay on course, with full power "harnessed." This producer removes about half of a 35' overburden with crawlers—takes off the balance with dragline.

**International® Construction Equipment**

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois
A COMPLETE POWER PACKAGE

*Enter 16 on card, page 183*

# LUBE LOGIC 5 new ways

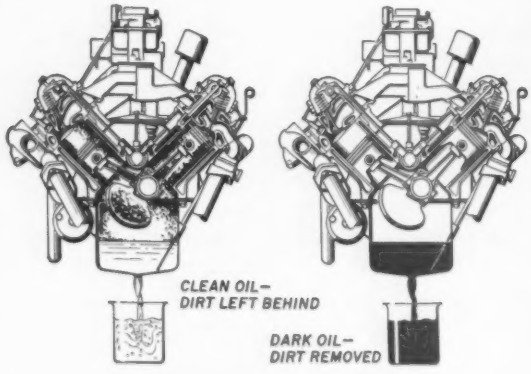



## Warm bath restores wire rope

The best way to get lubricant inside a cable, where it's really needed, is to immerse the cable or wire rope every 500 hours or so in a bath of warmed-up Texaco Crater A lubricant. It pays off by giving you far longer service life than you would get simply by applying Crater A externally.

This warm-bath treatment requires a horizontal trough to hold the lubricant. The trough should be fitted with pulleys to keep the cable completely submerged while it's passing through. A burlap collar should be rigged to wipe off excess lubricant as the cable leaves the box. An immersion of about a minute will allow the lubricant to work well into the strands.

This process is *not* an alternative to other lubrication. You should continue to clean the cable and apply Crater A externally every 10 to 100 hours, depending on the type of work the cable is doing. Remember also to be very sparing with lubricants on cables that wind on clutch-equipped drums, and never lubricate cables that are dragged in dirt.




## Dark engine oil . . . sign of a hard worker

Here's a motor-oil misconception that's still common enough to need discussion. Some folks think that the better an engine oil is, the more likely it is to come out as clean as it went in. The truth of the matter is just the other way around. A good detergent-dispersant oil holds onto dirt like an old friend. It keeps dust, soot and carbon in suspension, and carries it out of the engine when you drain the oil. Oil that looks clean when you drain it from the crankcase is a sign that these contaminants may still be inside the engine. Moral: oil that darkens in use is really doing its job.

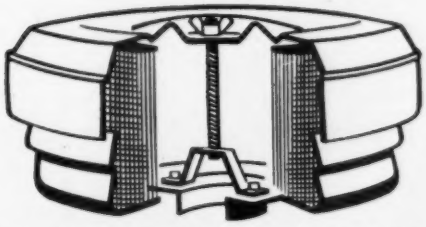
## Periodic tank drains protect diesel fuel injector

Dirt and water in diesel fuel can ruin a fuel injector in no time. Even if you keep the fuel clean during storage, there's still a chance that temperature changes will create enough condensate in the fuel tank on your rig to start rusting in the injector. Several operators have pretty well solved this problem by partially draining the fuel tank once or twice a week. Simply draw off about a gallon of fluid through the drain valve at the bottom of the fuel tank. You lose some fuel this way, but you also get the accumulated water and other contaminants clear out of the fuel system. The cost of the fuel you drain off is a small loss compared to the repair bills on the fuel injector.

# to trim downtime

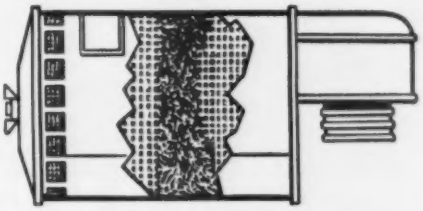
## Key points on air filter maintenance

In a day's operation a typical engine inhales several thousand cubic feet of air, and on a construction project all that air is probably loaded with abrasive dirt and dust. Good air-filter maintenance is the only way to make sure your engine gets the air and *not* the dirt. Here are some maintenance tips that will keep your air filter working better through thick and thin.



**Dry type air cleaners** (the ones with the fluted paper element) should simply be shaken or tapped lightly to remove dirt, and reinstalled. Never clean dry-type elements with kerosine or diesel fuel.

Additional precautions: empty centrifugal precleaners when the glass container is half full; don't remove the oil cup when the engine is running.



**If your filter is the wire gauze type,** and you want to re-use the element, wash the gauze in kerosine or diesel fuel, shake it dry *(don't* blow it with compressed air) and re-oil it with SAE 40 or SAE 50 oil to coat the element.

**Oil-bath type air filters** won't function properly if there's more than a half inch of sediment at the bottom of the oil reservoir. Check the sediment level by sticking a screw-driver down into the oil, and if you're anywhere near the half-inch level the bowl should be cleaned out and refilled. Also, inspect the filter every 5 to 50 hours to make sure the oil itself is at the right level. Every 500 hours the whole cleaner should be dismantled and cleaned, and refilled with new engine oil of the same grade used in the crankcase.


## New Texaco movie can help boost your profits

This factual, down-to-earth presentation shows you how 1% of your total budget (the amount usually spent on lubricants) can minimize a major cause of equipment downtime.

**SEE:** How the biggest engineering job ever undertaken was 90% lubricated with only *four* different products.

**SEE:** How one contractor lubricated 21 different types of equipment with only seven products.

**SEE:** "A Plan for Profits"—Texaco's newest sound and color movie.

**FOR AN EARLY SHOWING** contact your Texaco Contractor Representative *now*.

## TEXACO LUBRICATION ENGINEERS

Every month or so we'll bring you a batch of "sleepers"—little angles, so easy to overlook, where big savings in time and money can be made. But month in, month out, your local Texaco Man is your best source of money-saving lubrication ideas. Don't forget that "Lubrication is a major factor in cost control." Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

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TEXACO

*Throughout the United States*
*Canada • Latin America • West Africa*

CONVEYOR BELTING

# New U.S. SlurryKing takes loads up steeper grades

Now you can carry slurries, wet cement, paper pulp slush, and other wet or dry materials up steeper inclines than possible with conventional smooth-surfaced belts. The new U.S. SlurryKing was designed especially to prevent avalanching of solids, even carries the fluid portion of wet mixes along with the solids.

An exclusive heavy-duty cover design withstands the severely abrasive effects of both wet and dry materials to retain the belt's hill-climbing ability indefinitely.

What's more, the U.S. SlurryKing enables you to drain or retain the fluid portion of slurries depending upon the angle at which the conveyor and idler rollers are set. You enjoy a new kind of belt performance and flexibility.

You'll find the SlurryKing the answer wherever you need to move raw materials up steeper inclines with greater safety and control.

• • •

**For information about the SlurryKing, see your "U.S." Distributor. He's your best on-the-spot source of quality products, quick delivery, and technical service.**

WORLD'S LARGEST MANUFACTURER
OF INDUSTRIAL RUBBER PRODUCTS

**United States Rubber**
MECHANICAL GOODS DIVISION
Rockefeller Center, New York 20, N.Y.

# THE PIT WAS "IMPOSSIBLE"

*This portable crushing plant makes good use of Symons Cone Crusher advantages. The Symons Cone permits production of two grades of specification material simultaneously, thus eliminating the need for expensive secondary handling.*

## . . . but a SYMONS® CONE CRUSHER changed it into a 500 ton per hour profit-maker

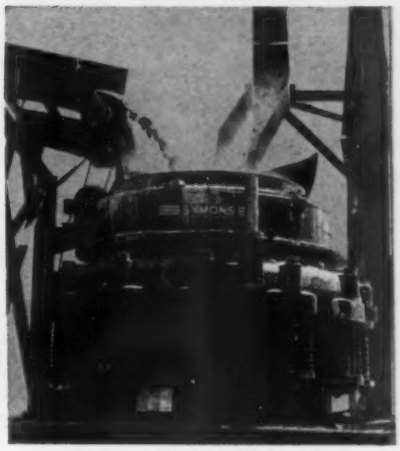
Here's how Texas contractor Hugh McMillan solved his problem of making a bad—but valuable—pit pay off.

His "impossible" pit near El Paso was too rocky to qualify for 1½" sub base, contained an excessive amount of large boulders, and was too dirty for production of hot-mix aggregates and cover chips without excessive fines. The only profitable way to produce both sub base and 100% crushed aggregate was to produce both materials simultaneously.

By incorporating a portable Symons 4¼ ft. Standard Cone Crusher unit in a Cedarapids Unitized Plant to up-grade the hot-mix aggregate and cover chips, McMillan produced approximately 500 tons per hour of strict specification material. He turned out a ratio of 20% of all-crushed aggregate to 80% of sub base material simultaneously to achieve the perfect proportion to meet quantity requirements and permit using all the material in the pit.

The Symons Cone Crusher's successful handling of McMillan's tough job is another example of its versatility in portable as well as stationary installations.

*Write for descriptive literature.*



**SYMONS® CONE CRUSHERS**

*. . . the machines that revolutionized crushing practice . . . are built in a wide range of sizes, for capacities to over 1500 tons per hour.*

**NORDBERG MANUFACTURING COMPANY · Milwaukee 1, Wisconsin**

NORDBERG

*SYMONS . . . a registered Nordberg trademark known throughout the world*

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Q261

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SAN FRANCISCO · TAMPA · WASHINGTON · WICHITA, KAN. · TORONTO · VANCOUVER · JOHANNESBURG · LONDON · MEXICO, D.F.

## Only one kind of industrial shell smashes kiln rings faster than this one

This is the Western Super X, the industry standard. It has an exclusive Cup Wad and Base Wad that virtually eliminate blow-by. It even has a special wrap that prevents lead build-up in the kiln gun's barrel and sound reducer. Only one shell can top it for knock-down power. And we make that one, too. Same name – Super X – same features. But instead of a lead slug, zinc is used. Zinc has a lower specific gravity so the slug is almost twice as large. It penetrates deeper, makes short work of *extra-hard* kiln rings. When you run into an occasional extra stubborn ring formation, zinc's higher cost makes a good deal of sense. But for smashing those run-of-the-mill kiln rings, you won't find a faster, more efficient shell than our Western Super X with the lead slug.

**Ramset**® WINCHESTER-WESTERN DIVISION Olin
300-J Winchester Ave., New Haven 4, Conn.

# News of the Industry

## 1,500,000-Bbl. Cement Plant To Be Built in Houston By McDonough Company

At Houston, Tex., ground was broken recently for the construction of a multimillion-dollar cement manufacturing plant designed to produce 1,500,000 bbl. of cement annually.

The installation, to be owned by the McDonough Company, Parkersburg, W.Va., will be built on a 38-acre tract at a cost of approximately $2 million. The plant is scheduled to be completed next year. It was indicated that 100 workers will be employed.

Fuller Company, a subsidiary of General American Transportation Corporation, has been awarded a $1,300,000 contract for the major equipment. It includes a rotary kiln (450 by 12 ft.), a 2,000-hp. clinker grinding mill, a 1,500-hp. raw-material grinding mill, electrical control panels, pneumatic conveyors, and dust collectors.

Engineering for the plant will be handled by Turnbull, Incorporated, Dallas, Tex.

The enterprise is headed by B. P. McDonough, president and owner, and E. B. Good, vice-president. The latter is also president of the Houston Shell and Concrete Company, Houston, Tex.

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A $200,000 sand and gravel processing plant is being erected at Ware Shoals, S. C., for Perry Minerals Company of Clearwater. Full operation is expected late in September. It will be known as the Ware Shoals Plant of Perry Minerals Co. Products will include several grades of sand and one grade of small gravel.

## $3 Million Plant Scheduled By U.S. Gypsum Company At Curtis Bay, Baltimore

A gypsum plant which will cost "at least $3 million" is to be built for the United States Gypsum Company at Curtis Bay, Baltimore, Md. Construction is to begin at once, and completion of the facility is expected within a year.

U.S. Gypsum acquired 32 acres of the 48-acre site from the Maryland Port Authority and 16 acres from the Baltimore and Ohio Railroad. About 300 workers will be employed in the plant.

---

Dates have been set for the annual meeting of the Missouri Limestone Producers Association — December 7 and 8. Sessions will be held at the Governor Hotel in Jefferson City.

## Coming Events

**September 11-13, 1961**—Seattle. American Mining Congress, Metal Mining and Industrial Minerals Convention.

**October 2-3, 1961**—Ottawa, Ont. Joint meeting, Industrial Minerals Divisions, Canadian Institute of Mining and Metallurgy and Society of Mining Engineers, American Institute of Mining, Metallurgical and Petroleum Engineers. Chateau Laurier.

**October 4 and 5, 1961**—Pocono Manor, Pa. Annual meeting, National Slag Association. Pocono Manor Inn.

**October 5-6, 1961**—Washington, D.C. Operators meeting, National Lime Association. Shoreham Hotel.

**October 16-20, 1961**—Chicago. Safety Congress, National Safety Council. Hilton, Pick-Congress, LaSalle, Sheraton-Chicago hotels.

**November 13-17, 1961**—College Park, Md. 16th annual Short Course for Industry Technicians, National Sand and Gravel Association and National Ready Mixed Concrete Association. University of Maryland.

**January 15-19, 1962**—Miami Beach. January meetings, National Limestone Institute, Inc. Roney Plaza Hotel.

**February 5-9, 1962**—Chicago. 32nd annual convention and biennial show, National Sand and Gravel Association and National Ready Mixed Concrete Association. Conrad Hilton Hotel and McCormick Place.

**February 12-14, 1962**—Chicago. Annual convention and machinery exposition, National Crushed Stone Association. Conrad Hilton Hotel.

## Construction Put in Place During Month of July Above Year-Ago Rate

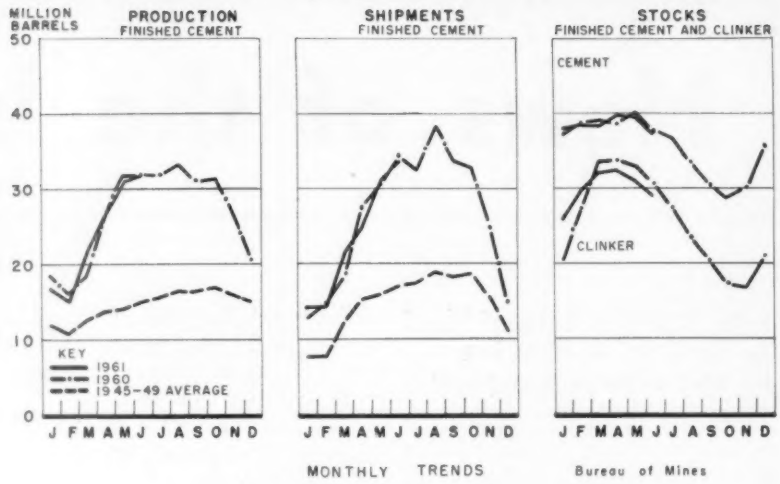
The value of new construction put in place in July, 1961, amounted to $5.4 billion, according to preliminary estimates of the U.S. Department of Commerce. These estimates are released for the first time, reflecting the revised, higher level of private nonfarm-residential additions and alterations announced in June by the Census Bureau.

On the new basis, total new construction put in place in July, 1961, was 1 percent more than in June, 1961, and represented a slight increase in the seasonally adjusted annual rate between the two months. Spending for total new construction during July, 1961, was 5 percent above that of July last year.

*ITEMS:* Private construction, estimated at $3.7 billion, was the same as in June (normally, a 1 percent seasonal decline is expected) but up 4 percent from July, 1960. Private nonfarm-residential was estimated at $2.1 billion—3 percent less than in June, but 1 percent greater than in July, 1960.

*ITEM:* Public construction, estimated at $1.7 billion, increased more than the normal seasonal change from June. It was up 4 percent (the usual increase is 2 percent), and was also 8 percent above July, 1960.

*CUMULATIVE VALUE:* New construction expenditures in the first seven months of 1961 were estimated to total $31.7 billion, compared to $30.9 billion in the same period last year. Total private construction expenditures, at $22.4 billion, were about the same as last year, while private nonfarm-residential declined 6 percent to $12.4 billion, and total public construction increased 10 percent to $9.3 billion.




### — June, 1961, Finished Portland Cement —

SUMMARY—Production of finished portland cement in June, 1961, as reported to the U. S. Bureau of Mines, totaled 31,594,000 barrels—a decrease of 1 percent compared with June, 1960. Mill shipments totaled 33,739,000 barrels—a decrease of 1 percent compared with June, 1960. Stocks of 37,353,000 barrels of finished portland cement were 1 percent less than those on hand June 30, 1960. Clinker production totaled 29,503,000 barrels—about the same as in June, 1960.

►PRODUCTION—A total of 172 plants in 39 states and Puerto Rico reported production of 31,594,000 barrels compared with 31,930,000 barrels in June, 1960.

Clinker production was 29,503,000 barrels compared with 29,537,000 barrels in June, 1960.

High-early-strength portland cement output totaled 1,055,000 barrels—a decrease of 18 percent from the June, 1960, production of 1,283,000 barrels.

Prepared masonry cement production totaled 1,914,000 barrels—a decrease of 11 percent from the 2,150,000 barrels produced in June, 1960. Masonry cements are reported in 280-lb. barrels.

►SHIPMENTS—Mill shipments of finished portland cement from 176 plants totaled 33,739,000 barrels, compared with 34,045,000 barrels in June, 1960.

Shipments were higher in 11 and lower in 11 districts. The greatest increases were in the Colorado-Arizona-Utah-New Mexico and Puerto Rico districts.

Shipments of high-early-strength cement totaled 1,356,000 barrels—an increase of 2 percent over the 1,327,000 barrels shipped in June, 1960.

Prepared masonry cement shipments totaled 2,002,000 barrels—a decrease of 8 percent from 2,175,000 barrels shipped in June, 1960.

►STOCKS—Mill stocks of 37,353,000 barrels of finished portland cement were on hand June 30, 1961—a decrease of 1 percent from 37,667,000 barrels on June 30, 1960. Stocks of clinker on hand June 30, 1961, totaled 28,960,000 barrels—a decrease of 5 percent from 30,522,000 barrels on June 30, 1960.

►FIRST SIX MONTHS OF 1961—For the January-June period, the production volume of finished cement amounted to 142,792,000 bbl., compared with 144,115,000 bbl. in the 1960 six-month period. Total shipments for the first six months of 1961 are reported at 139,709,000 bbl.; in the same period of 1960 total shipments were 136,594,000 bbl. (Shipment figures do not include finished cement used in the manufacture of prepared masonry cement, as follows: June, 1960—318,000 bbl.; January-June, 1960—1,294,000 bbl.; June, 1961—291,000 bbl.; January-June, 1961—1,282,000 bbl.)

### Long Island Distributing Plant Scheduled by Marquette Cement

A tract has been purchased by Marquette Cement Manufacturing Company on Flushing Creek at College Point, Flushing, Long Island (N.Y.), for the immediate construction of a distributing plant.

Cement will be produced at the Catskill plant, and marketed by Marquette's sales subsidiary, North American Cement Corporation. The plant will be in operation by 1962.

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The Graham Construction Company, located near Pueblo, Colo., recently acquired another gravel operation, also near Pueblo.

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Gifford-Hill and Company, Inc., Dallas, Tex., has purchased the fiscal assets of Meriwether Gravel Company and Meriwether Supply Company, both of Shreveport, La. The ready-mixed concrete and building materials operation will continue under the name of Meriwether Supply; the gravel, sand and prestressed operations will be under the Gifford-Hill name.

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The Berry Material Corporation, headed by Albert Berry of Scottsburg, Ky., recently purchased the North Vernon and Versailles (Ky.) stone quarries from Paul Frank.

## Wis. Aglime Producers Discuss 1962 ASC Program At Sectional Meetings

During the week of August 14 four sectional meetings of the Wisconsin Aglime Producers Association were held. The purpose of the meetings was to promote friendship among new and prospective members. During the sessions the aims and purposes of the association were discussed, and the 1962 ASC program was explained in detail.

Aglime producers and suppliers heard talks by Dr. Richard Wiese, soils specialist, University of Wisconsin Extension Service; Kenneth Hoover, state administration officer, Wisconsin ASC Committee; Wilbur Zwettler, program specialist, United States Department of Agriculture; Gene Hruby, Wisconsin ASC office; Vic Brockmiller, president of the association; and J. O. Smith, association secretary-treasurer.

Dr. Wiese discussed the factors influencing the quality of aglime and the important contribution it makes to soil fertility. His talk was illustrated with slides. Mr. Zwettler described the 1962 ASC program. Special emphasis was given to discussing a proposal to give more consideration to neutralizing value in evaluating aglime submitted for sale through the 1962 ASC program.

### Blue Rock Quarry in Maine Opening New Plant Setup

Blue Rock Quarry, Westbrook, Maine, is expanding ready-mix operations into the Sidney area. Blue Rock produces crushed stone, concrete products, and bituminous aggregates.

The firm has purchased a 25-acre tract between Augusta and Waterville containing an extensive supply of limestone. Construction is also under way on a large and fully automated batching plant in Sidney.

Blue Rock maintains its own research and control laboratory at Westbrook.

## Have You Noticed?

We here at PIT AND QUARRY hope you have noticed that P & Q looks different this month. And you're probably wondering what we've done, and what it means to you, the reader.

What we've done is print the magazine in a different printing plant in suburban Chicago on modern, high-speed equipment, using new type.

The most obvious change is the actual printing, which gives you a clarity and sharpness in the halftones and a brilliance and intensity of blacks and colors achieved only in the better letterpress printing processes.

The move to Barrington, Ill., a suburb of Chicago, represents a growing trend among publications to take advantage of economy and flexibility, while retaining quality reproduction.

Up-to-date two-color presses not only make possible a better printing job but also speed up the operation, which, when coupled with modern bindery equipment and fast suburban post office handling, will put each issue of P & Q in your hands on time month after month.

The face of the type that was set for this issue was brand new, and the mats used to form the type had never before been used. As a result, the raised type has a bright silvery sheen, with no broken or rounded edges.

We liked the "old" P & Q, too. But, we felt that although we were covering the nonmetallic minerals field thoroughly and authoritatively, the magazine did not have the brand, spanking new appearance that was called for.

There is an opportunity for considerable flexibility in make-up. We hope to make future issues even more attractive, with more colorful layout styles, so that you can enjoy and appreciate your copy.

The new printing process, we think, makes P & Q look as exciting as it really is. Do you agree? Please write and let us know.

## Susquehanna-Western, Inc. To Produce Expanded Shale At New California Plant

Construction of a new plant has been started at San Clemente, Calif., for the production of Crestlite, an expanded shale to be used as a lightweight aggregate in concrete. The facility will be owned and operated by Susquehanna-Western, Inc., a subsidiary of The Susquehanna Corporation of Chicago.

The $1,000,000 plant, located midway between Los Angeles and San Diego, is scheduled to be completed in January, 1962. It is situated on a 400-acre site reportedly containing millions of tons of raw material.

Initial production will be at the rate of 1,000 cu. yd. per day; and the plant design will permit expansion to increase this rate.

### Florida Conservation Program Finds Partner in Lehigh P. C.

Because only a small portion of Lehigh Portland Cement's land holdings in Flagler County, Fla., will be used for cement-producing purposes during the next 25 years, the company has put 600 acres under the direction of the Bunnel Timber Company for reforestation.

Since Lehigh has participated in the project, over 750,000 seedlings have been planted, including the most recent 32-acre seeding.

This experiment has aroused interest among pulp-producing companies and state agencies throughout Florida, who have representatives observing its progress.

In addition, acreage from which coquina shell has been extracted goes through a reclamation process to become a part of this same conservation program.

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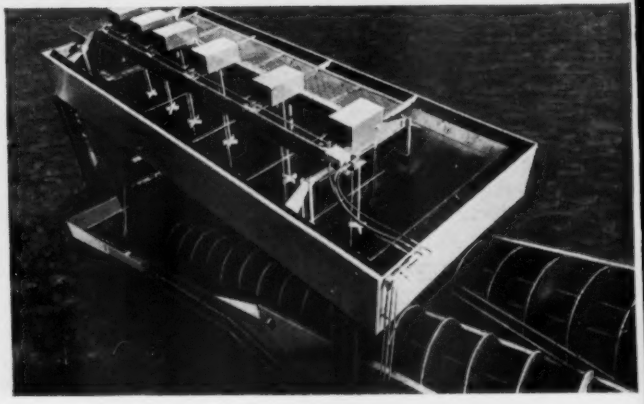
Pending final approval, a land swap is in progress in St. Louis, Mo. Missouri Portland Cement Company will receive 2.9 acres of land near the company's present dock facilities in exchange for .89 acres of Riverview Drive land belonging to the company, which the city wants to incorporate in a memorial park. A cash consideration, for the difference in the size of the plots, is included in the deal.

# "We Can Closely Control Classification . . . . . Which Heretofore Had Been A Real Problem To Us"

*Says: W. A. Carson, President*
*Helena Sand and Gravel Co., Helena, Montana*

The Eagle Portable Sand Washing-Classifying-Dehydrating Section shown at right is at the plant of Helena Sand & Gravel Co. Harry Baker, Superintendent, shown, likes the convenient controls. W. A. Carson, President, states, *"One of the outstanding features of this Eagle equipment is that we can closely control classification, which heretofore had been a real problem to us. We are making concrete sand, plaster sand and masonry sand and special-use sands that offer a constant service that is helpful in our public relations as well as our sales".*

The Eagle Portable Sand Section can readily be hauled across the pit or across the state, yet it performs just like a stationary sand washing section. Can be hauled right to the operations site, electric and water connections quickly made and it's ready to operate. Consists of Water Scalping-Classifying Tank and two Single Screw Washer-Classifier-Dehydrators. Each can be regulated to produce a different material gradation or both can produce the same gradations if desired. When the photo was taken, Helena's Portable Section was producing concrete sand and masonry sand simultaneously.



*Real Ingenuity Went Into Designing This Eagle Sand Section*

## . . . It's Paying Off For Producers!

A Michigan producer operating a number of deposits can move the Eagle Portable to the pit where it is needed. If both washers are producing the same gradation, the adjustable discharge chutes are arranged to deposit on a single belt, as shown at far left. This producer also operates several Eagle Stationary Sand Washing Sections.

Canadian producer takes Eagle Portable Sand Section, shown at left, to a location near the job site, instead of trucking sand to the job. Note that in this case two gradations of material are being produced and discharge chutes are arranged so that each deposits on a separate conveyor belt. When not out on a contract this Portable helps build stockpiles at home base.

All adjustments and controls are simple and readily accessible. Long handled wrenches provided, as shown at far left, for adjusting metering "splitter" gates below the tank while plant is in operation. Extra V-belt drives are provided to allow setting of screws at proper RPM for each individual product. Electrical control cabinet at ground level contains push button motor control stations, main circuit breaker and bleed valve control switches.

The Eagle Portable Section uses same efficient electric-hydraulic system for control of bleeder valves as used at stationary plants. Rugged, they are unaffected by travel. Only requirement is that tank be fairly level for operation and jacks are provided to trim unit level at each installation. Height of tank and controls is no greater than most moving vans, so that highway travel is by no means restricted. Send for Catalog 61, giving full details.

SINCE 1872

**EAGLE IRON WORKS**

ENGINEERS • MANUFACTURERS

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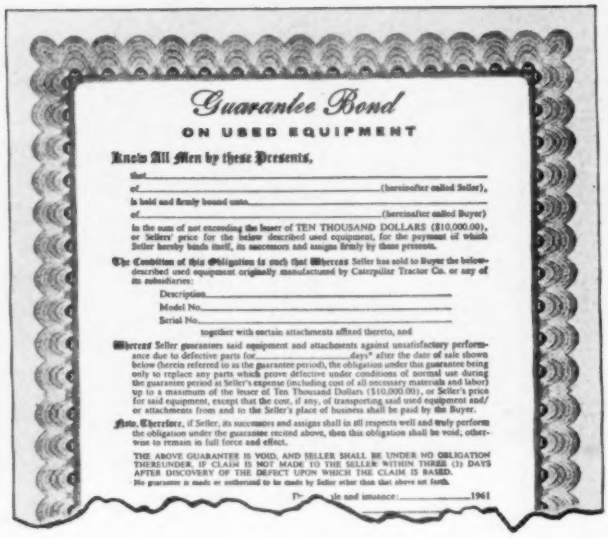
EAGLE IRON WORKS

# This Bond Is an Investment in You



Guarantee Bond

ON USED EQUIPMENT

Know All Men by these Presents,

that _____

of _____ (hereinafter called Seller),

is held and firmly bound unto _____

of _____ (hereinafter called Buyer)

in the sum of not exceeding the lesser of TEN THOUSAND DOLLARS ($10,000.00), or Sellers' price for the below described used equipment, for the payment of which Seller hereby binds itself, its successors and assigns firmly by these presents.

The Condition of this Obligation is such that Whereas Seller has sold to Buyer the below-described used equipment originally manufactured by Caterpillar Tractor Co. or any of its subsidiaries:

Description _____

Model No. _____

Serial No. _____

together with certain attachments affixed thereto, and

Whereas Seller guarantees said equipment and attachments against unsatisfactory performance due to defective parts for _____ days* after the date of sale shown below (herein referred to as the guarantee period), the obligation under this guarantee being only to replace any parts which prove defective under conditions of normal use during the guarantee period at Seller's expense (including cost of all necessary materials and labor) up to a maximum of the lesser of Ten Thousand Dollars ($10,000.00), or Seller's price for said equipment, except that the cost, if any, of transporting said used equipment and/or attachments from and to the Seller's place of business shall be paid by the Buyer.

Now, Therefore, if Seller, its successors and assigns shall in all respects well and truly perform the obligation under the guarantee recited above, then this obligation shall be void; otherwise to remain in full force and effect.

THE ABOVE GUARANTEE IS VOID, AND SELLER SHALL BE UNDER NO OBLIGATION THEREUNDER, IF CLAIM IS NOT MADE TO THE SELLER WITHIN THREE (3) DAYS AFTER DISCOVERY OF THE DEFECT UPON WHICH THE CLAIM IS BASED.

No guarantee is made or authorized to be made by Seller other than that above set forth.

Purchase and issuance: _____ 1961

**Signed by your Caterpillar Dealer, this bond gives you up to $10,000 worth of machine dependability**

Bonded Buy means guaranteed machine dependability. You can get a completely-checked, used Cat-built machine that has the Cat Dealer's confidence and guarantee, PLUS this bond from Lumbermens Mutual Casualty Company that backs up your machine with as much as $10,000 worth of parts and labor for the period you and the dealer agree upon.

See your dealer. Read the bond. Check the details. This guarantee can apply on your next used machine. And you pay no extra premium for this assurance. Dependable Bonded-Buy machines are priced right—and your Cat Dealer offers terms to match your needs. Call him or see him soon. Do business with the man whose business is built on dependability.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Enter 28 on card, page 183


## Safe, Economical Method For Loading, Unloading Urged by Gypsum Assn.

Recognizing the vital importance of dealer co-operation in achieving lower costs of materials handling, the Gypsum Association—through its Materials Handling Committee—has launched a campaign to reduce safety hazards and thereby eliminate unnecessary costs for building materials dealers.

Lloyd H. Yeager, secretary-general manager of the association, is appealing to dealers to clean all cars of dunnage and to dispose of it properly. He warned: "Failure to remove and dispose of dunnage at the point of destination might force railroads to impose drastic regulations that would nullify the inherent savings found in the unit loading system. . . ."

Scientific unit loading, according to Mr. Yeager, "has already saved building materials dealers hundreds of thousands of dollars in unloading costs."

Dunnage left on a flatcar returning to the plant, Mr. Yeager emphasized, can fall on adjacent tracks and cause the wrecking of an oncoming train. Unremoved wire ties and strappings, he added, represent a safety hazard to workmen or trainmen, whether the car is moving or standing still.

To help dealers further reduce time and expense of mechanical unloading, the Gypsum Association's Materials Handling Committee suggests the use of birch or oak dividing wedges. These wedges—16 by 5 in., tapered from a 6-in. butt—are inserted under several bundles of gypsum wallboard, to permit the forks of a lift truck to remove them easily from a rail boxcar or a flatcar. The use of the wedges makes it possible for a fork lift truck of average capacity to unload, by increments, any stack of gypsum wallboard. Dunnage disposal is sharply reduced.

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A $600,000 building permit has been issued to the Missouri Portland Cement Company for the building of a cement distribution plant in Omaha, Nebr. Cement will be barged from the Kansas City plant to Omaha.




Enter 29 on card, page 183 →

# 19 tons of sub-base material loaded in 1.4 minutes!

To be exact, 19.75 tons of 3000 lb./yd. material loaded in that truck in 1.4 minutes. No one-time-only shot either. Another example: five trucks loaded out one after the other in 1.3 minutes each with an average of 17 tons per truck. That's routine production for the Caterpillar 966 with 2¾ yd. bucket at the Nello L. Teer quarry near Durham, N. C.

Can your loader match that? This 966 operator said, "I can load up to 100 tons an hour *more* with the 966 than with our other loader with a bigger bucket."

Reasons: "It's the fast lift and drop of the bucket, fast steering and short turning radius, fast power shift transmission and the automatic bucket positioners." There are hard mechanical reasons behind that performance testimony. The hydraulic system is fast because the pump is driven directly from the engine, is little affected by the load on the drive train. Finger-touch power shift transmission shifts from forward to reverse, first and second, almost instantly and *smoothly*.

If low production is your big problem, talk to your Caterpillar Dealer. Take a look at the Caterpillar line of wheel loaders—80 HP 922, 105 HP 944 and the 140 HP 966 (all flywheel ratings) . . . bucket sizes from 1¼ to 4 yd. Try a Cat loader on your job, see the easy operation, check the production, remember Cat dependability. Do you know anything that can beat that combination?

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**WHY THE BUCKET'S FASTER:** It's going up automatically, will stop and hold at full height—while the operator is backing out and pulling up to the truck. After the load is dumped automatic bucket positioners take over again and tilt the bucket back to proper digging angle—and the operator is free to maneuver the loader. It's all part of the fast-operating control system—power-boosted steering and brakes, power shift transmission.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**CAT WHEEL LOADERS ARE SETTING NEW PRODUCTION RECORDS**

The ore storage tanks, blending and processing facilities, and the warehouses at the new Great Lakes Carbon Corporation plant at Antonito, Colo. The facility produces filter aids from perlite ore, utilizing highly automated final processing and grading operations.

## Diamond Alkali Merger With Bessemer Limestone Okayed by Stockholders

Stockholders of Diamond Alkali Company, Cleveland, voted at a special meeting to approve a merger with Bessemer Limestone & Cement Company, Youngstown, Ohio. They authorized issuance of 500,000 shares of no par preferred stock in place of 250 shares of existing $100 par convertible preferred, none of which is outstanding, for exchange purposes with Bessemer. Shareholders of Bessemer had approved the proposal at an earlier meeting. The merger was effective September 1.

The cement plant and limestone quarries will be known as the Bessemer Cement Company, a division of Diamond Alkali Company, and will be operated as a part of Diamond's cement-coke division.

## Great Lakes Carbon Corp. Opens Filter Aid Operation

Great Lakes Carbon Corporation has a new plant for processing filter aids from perlite ore, located at Antonito, Colo., some 200 miles south of Denver. The facility is a part of a major expansion program under way in the United States and abroad.

Almost completely automated in the final processing and grading operations, the plant has an annual capacity of 24,000 tons of filter aid products; provisions have been made for expansion and additional capacity when needed.

The corporation's wholly owned deposit at No Agua, N.M., 23 miles south of Antonito, supplies the new plant with its perlite ore. The No Agua deposit, one of the largest in the nation, is estimated to have in excess of 100,000,000 tons of high-quality ore, free from organic matter and other impurities.

## Two-Mile Conveyor System Used in Brewster Project

George M. Brewster and Son, Inc., of Bogota, N. J., general contractor for the $83 million George Washington Bridge project in New York City must move a palisade containing 4,000,000 tons of earth and traprock from its location near the bridge to fill in marshy New Jersey meadowlands about two miles away from an interchange. (A second deck is to be added to the bridge.)

For this work Brewster officials decided on a material-transporting conveyor system that is 10,900 ft. in length and consists of ten flights ranging from 50 to 2,000 ft. in length. Material is loaded by shovel into rear-dump Euclid trucks and discharged into an Allis-Chalmers gyratory crusher for reduction to minus 15 in.

The crusher discharges onto the conveyors, all Barber-Greene, to the marshland site, where they discharge into two large truck bins. The bins feed to trucks for delivery. The conveyor system runs along the right-of-way for Interstate 95.

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The Engineers Joint Council, a federation of 24 national and regional engineering societies, will change its address as of September 5, 1961. On this date the council will join 18 other major engineering groups in the new United Engineering Center located at 345 East 47th Street, New York, N. Y.

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M. W. Brown Enterprises is building a $500,000 sand and gravel plant at Orland, Calif., instead of the previously announced Willows (Calif.) site. The change in plans is based on higher quality materials at the new site.

## Ideal Cement Offers Films On Concrete History, Uses

*New Dimensions in Concrete* and *Futures in Concrete* are two sound-color films available from Ideal Cement Company, Public Relations Department, Denver, or from the firm's regional sales offices.

*New Dimensions* is a 28½-minute feature which begins with prehistoric days and brings the subject of concrete up to date. New uses and shapes of concrete are presented, to show how forward-looking management, modern operations, and maintenance of a high-quality product serve the nation's growing construction needs.

*Futures*, 14 minutes long, covers the recent construction facilities at Ideal's Tijeras plant which doubled capacity there.

## Denver Safety Campaign Aided by Brannan S & G Co.

A graphic reminder of the "Thumbs Down on Violators" campaign sponsored by the Metropolitan Safety Council of Denver is featured by The Brannan Sand & Gravel Co.

On their trucks are representations of flower-covered graves and white crosses to remind drivers and pedestrians of the possible results of an accident. Attached are signs advertising the safety campaign.

# "I would rather have a TELSMITH 10 to 1"

Says
LEO FRANK
of
Frank Bros.
Milton Junction
Wisconsin
Aggregate Producers

P-25-761

♦ You never saw a man more fired up about a crushing plant. "I would recommend this Telsmith 367 Gyrasphere portable plant to anyone," says Mr. Frank. In four years, and upwards of 400,000 tons of actual crushing, the Telsmith Gyrasphere required *no replacement of parts* and *not one cent for maintenance welding.*

♦ Mr. Frank had the unique experience of crushing with his Telsmith 367 along side another nationally known plant in the same pits. The Telsmith plant proved to be far superior to the combination jaw and roll crusher machine in both performance and economy. Cost per ton crushed was considerably less than that of the dual crusher type.

♦ His plant mechanic, Jim Murphy, said "Telsmith is *no maintenance problem*, while you can't keep the other crusher operating without working on it regularly."

♦ Compare these advantages and you'll see why Mr. Frank prefers Telsmith 10 to 1: lower initial cost; maintenance costs cut to the bone; big ratio of reduction (6" down to ¾") for high capacity crushing. All this means one thing—*highly profitable performance.*

♦ Call your Telsmith distributor, or write direct for Bulletin 276. See for yourself why Frank Bros. are so high on Telsmith's 367 Gyrasphere portable plant.

Telsmith 367 Portable closed circuit crushing-screening plant of Frank Bros., Milton Junction, Wis.

**SMITH ENGINEERING WORKS**
504 E. CAPITOL DRIVE, MILWAUKEE 1, WISCONSIN
DIVISION OF Barber-Greene

Cable Address: Sengworks, Milwaukee • Representatives in Principal Cities in all Parts of the World

## Work Nears Completion On New Plant, Docks For Green Bag Cement

Construction is well under way on new limestone operations and shipping docks being built by Green Bag Cement Company (a division of Marquette Cement Manufacturing Company), Morgantown, W. Va.

Capacity of the primary crusher plant will be 700 tons of limestone hourly. The first of the 10 caissons to be sunk in the river for the docks is already in place.

The company has spent over $250,000 acquiring property for the mine, plant, and docks. Dravo Corporation, Pittsburgh, holds the construction contract for the jobs.

### Consolidated Rock Products Explains Public Relations

*What does Public Relations Mean to Your Company?* is the title of a two-page general statement of policy in *The Consolidated Mixer*, monthly publication of Consolidated Rock Products Company, Los Angeles.

The article points out that the term is subject to many interpretations; it began as simply "publicity," but it has changed and now covers almost everything from product design to marketing strategy. One brief definition is the equation "D + I = PR" (translated: Deeds plus Information equals Public Relations).

Consolidated believes PR *does* cover an entire gamut of company activities, including courteous receptionists, pleasant telephone voices of personnel, new plants, employee participation in civic projects, customer satisfaction, and trade association activities.

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Northern Lightweight Aggregate, Inc., Cohoes, N. Y., has been purchased by Certified Industries, Inc., Long Island, N. Y., a concrete producer, in a share-for-share exchange of stock valued at more than $1 million. No changes in management or policy are planned.

## Record-Breaking Trend In '61 Building Contracts To Continue: Dodge Corp.

Construction contracts are headed for their 15th consecutive record-breaking year in 1961, judging by their performance to date, F. W. Dodge Corporation reports.

In a midyear review of construction contracts the corporation's economists point out that by mid-1961, all three major construction categories were running ahead of year-earlier levels, most of the upward push coming from the heavy engineering and non-residential building sectors.

Total construction contracts in the first half of 1961 rose to $18.2 billion, according to Dodge, a gain of 4 percent over the comparable period last year, and the second-highest January through June level in history.

"For the rest of 1961," the report concludes, "we expect construction as a whole to maintain its current bullish performance. It is almost certain that total 1961 contracts will show at least a modest gain from last year's level, and set a new record for the 15th year in a row."

Other key developments noted in the review include the following:

—Contracts for commercial buildings were at a new all-time high for the period, totalling $1,828,000,000, up 7 percent over the figure of a year ago.

—Educational building contracts were also running at record levels, up 5 percent to $1,545,000,000.

—In the residential sector, contracts for apartment projects rose a dramatic 30 percent. Single-family houses were down 5 percent, but rising late in the period.

—Contracts for electric light and power systems were up 40 percent and provided most of the spark in heavy engineering contracts. Highways edged only slightly above the 1960 total.

—As expected, contracts for manufacturing buildings dropped sharply, falling 12 percent to $856,000,000. However, a 19 percent rise in June may have signaled the end of the decline in this sector.

## Lime Sold and Used in May, 1961

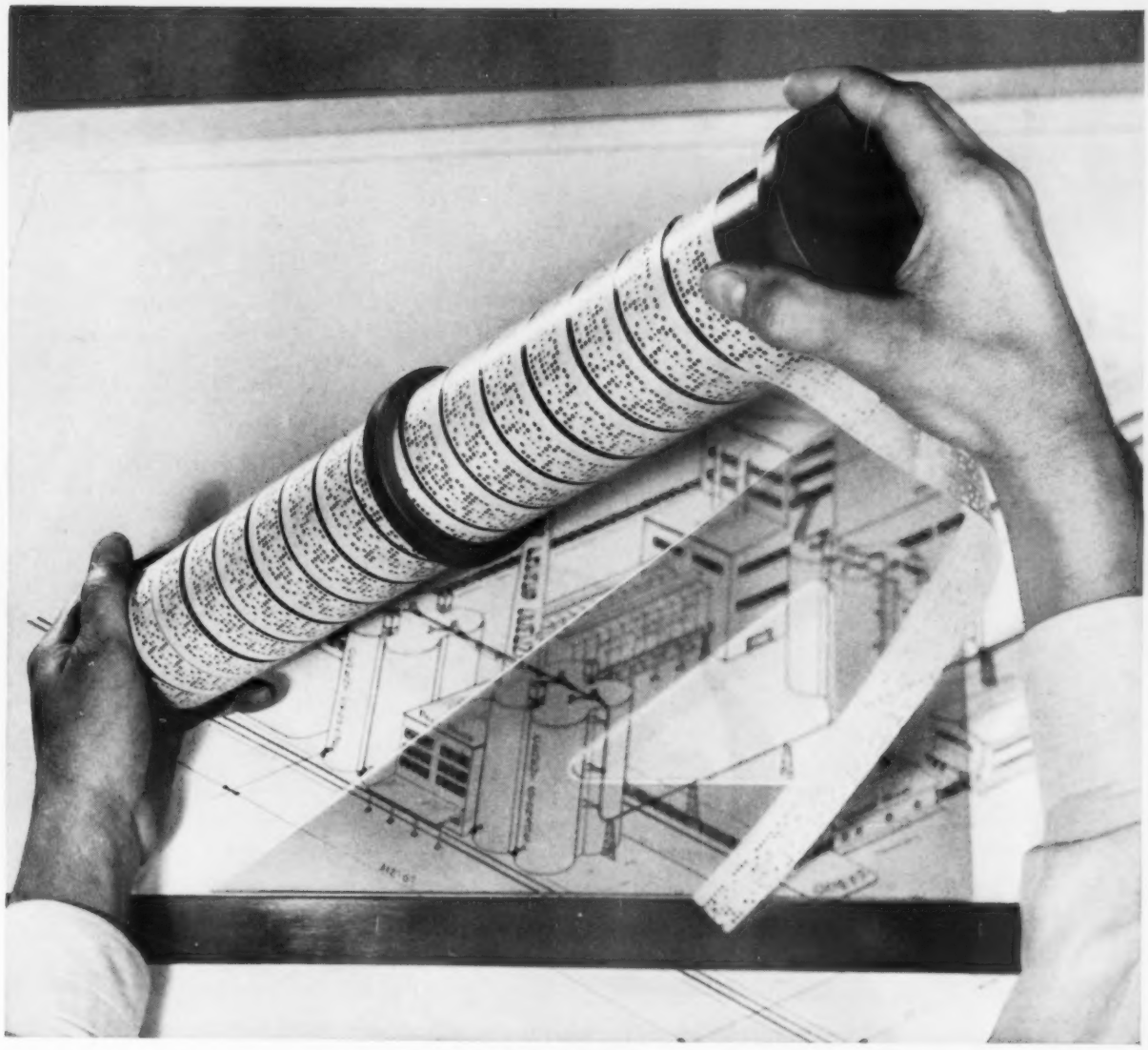
Lime sold and used in May, 1961 (1,125,157 short tons), increased compared with the previous month, according to reports by producers to the United States Bureau of Mines.

Increases were reported in agricultural, construction, chemical and other industrial, and refractory lime. Open-market lime constitutes approximately two-thirds of the total lime reported; the remaining one-third is captive tonnage.

**Lime Sold and Used by Producers[1] in the United States, in Specified Periods of 1960-61, by Types and Major Uses in Short Tons**

| | April | May | | January-May | |
|---|---|---|---|---|---|
| | 1961 | 1961 | 1960 | 1961 | 1960 |
| By types: | | | | | |
| Quicklime | 77,278 | 891,377 | 817,765 | 3,897,105 | 4,028,951 |
| Hydrated lime | 210,260 | 233,780 | 246,374 | 1,014,969 | 1,105,022 |
| Total lime | 987,538 | 1,125,157 | 1,064,139 | 4,912,074 | 5,133,973 |
| By uses: | | | | | |
| Agricultural: | | | | | |
| Quicklime | 12,436 | 38,017 | 7,706 | 59,449 | 25,686 |
| Hydrated lime | 12,645 | 11,850 | 14,462 | 45,303 | 50,204 |
| Total | 25,081 | 49,867 | 22,168 | 104,752 | 75,890 |
| Construction: | | | | | |
| Quicklime | 6,101 | 6,940 | 7,616 | 30,509 | 34,328 |
| Hydrated lime | 79,188 | 92,583 | 85,257 | 372,503 | 359,400 |
| Total | 85,289 | 99,523 | 92,873 | 403,012 | 393,728 |
| Chemical and other industrial: | | | | | |
| Quicklime | 625,519 | 675,595 | 630,184 | 3,133,518 | 2,931,201 |
| Hydrated lime | 118,427 | 129,347 | 146,655 | 597,163 | 695,418 |
| Total | 743,946 | 804,942 | 776,839 | 3,730,681 | 3,626,619 |
| Refractory (dead-burned dolomite) | 133,222 | 170,825 | 172,259 | 673,629 | 1,037,736 |

[1]The monthly canvass excludes the output of plants producing less than 10,000 tons a year.



# Traylor designs a multitude of kilns by computer

## . . . to make sure you get the one design that's best for you

Before the kiln you order gets into metal—before it even reaches the drawing board—Traylor engineers develop from their computer the preferred design variations appropriate to your requirements, including maintenance.

Stored on punched paper tape is the knowledge and experience of many engineers over many years. Months of calculations are done in days or hours. Traylor engineers are freed from routine and repetitive computations for the more creative task of *evaluation* . . . determining which of the almost infinite combinations of vital variables will assure you the best kiln design, the highest thermal efficiency not only of the kiln itself but of auxiliary equipment, too.

The Traylor computer is programmed to solve many major problems in addition to basic kiln design . . . including clinker cooler air and heat balance, dew point of kiln exhaust gases, analysis of kiln heat and air flow.

Through its own facilities and those of Fuller Company, Traylor brings to bear on your kiln problems a breadth of process know-how long recognized by industry as unexcelled.

Call in Traylor early in your plans. Write outlining your requirements. Traylor experience is at your service. Literature is available on request.

*See Pit and Quarry Handbook for details and specifications.*

Traylor — FULLER COMPANY — GENERAL

**TRAYLOR ENGINEERING & MANUFACTURING**

DIVISION OF FULLER COMPANY

1556 MILL STREET • ALLENTOWN 1, PA.

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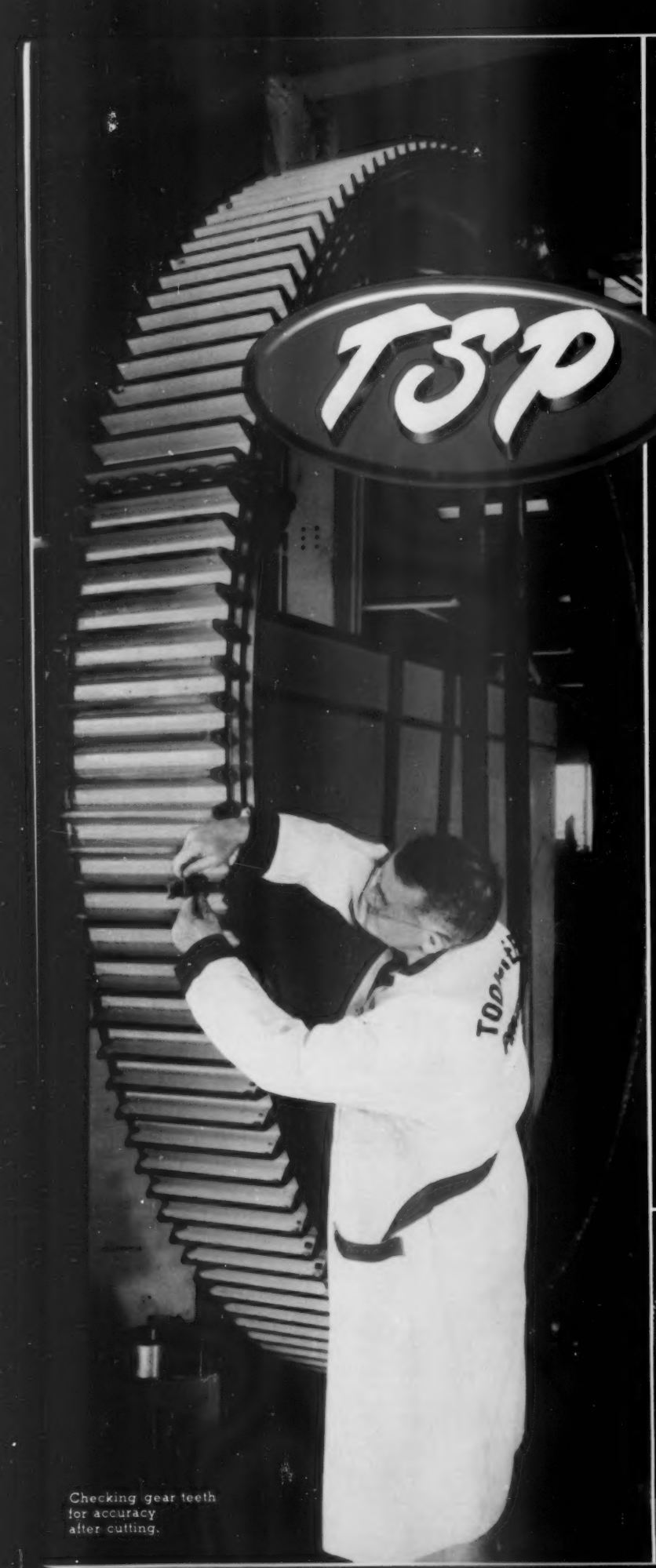
TKA-14

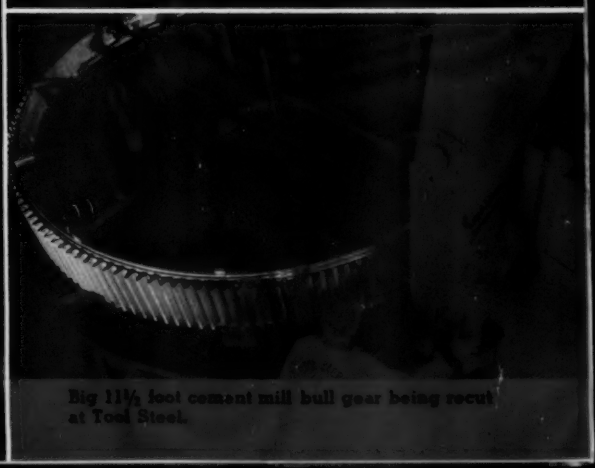



Checking gear teeth for accuracy after cutting.

# products

Continuous expansion of facilities maintains Tool Steel Gear & Pinion Co. leadership in supplying the cement industry with products and services of superb quality. For example, Tool Steel's Maag gear cutter is the biggest in the world. It can cut gear teeth on gears with a 197" diameter and a 20 3" face. It can cut helical gears up to 180" diameter, 15 degree helical and 177" diameter and 30 degree helical. High quality precision cutting combined with a rapid delivery schedule is a service that cement plants receive when they send their big gears to us for cutting or recutting.

Tool Steel Process" characterized products are available for practically every key point in cement equipment including pulverizers, mixers, drag lines, kilns, dryers, shovels, cranes.



Big 11½ foot cement mill bull gear being recut at Tool Steel.

# and service unlimited

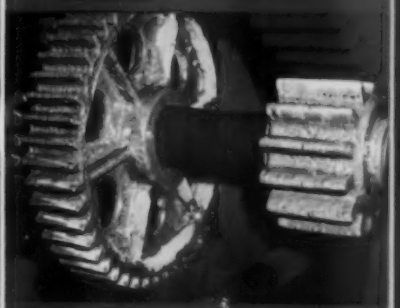
Close-up of TSP wheels on bucket crane after several years service.

TSP trunnions and gearing on rotary dryer.

Close-up of TSP trunnions and shaft on kiln. Note smooth appearance after long service.

TSP compartment mill drive pinion. In continuous service since 1928 and still in excellent condition.

TSP gudgeons on screw conveyors deliver outstanding performance.

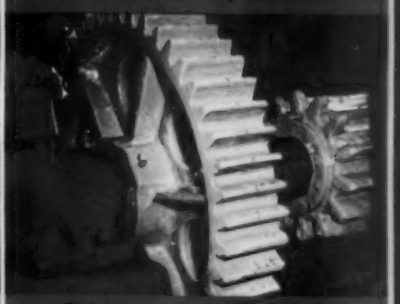


TSP main agitator drive pinion and intermediate drive bull gear after several years service.

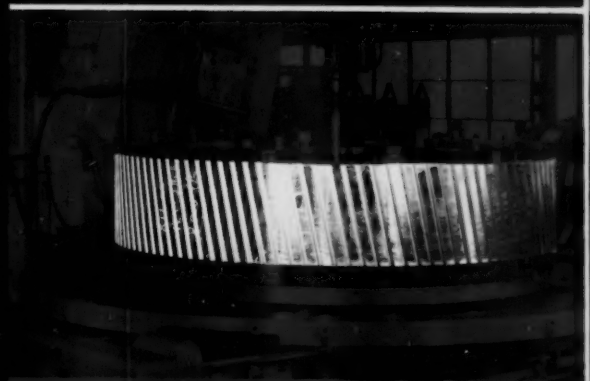
THE TOOL STEEL GEAR AND PINION CO.

CINCINNATI, OHIO, U.S.A.

TSP main hoisting and closing drums on overhead crane. Note smooth and true grooves on TSP drums.

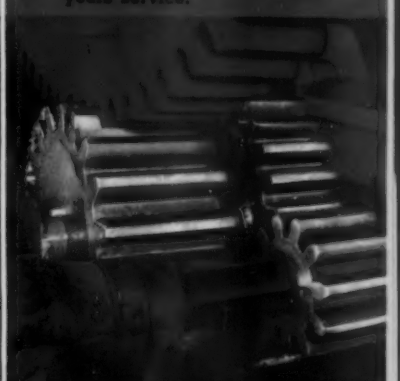


Rotary cooler showing TSP drive pinions and intermediate drive bull gear after several years service.



Helical gear being cut on Tool Steel's big gear cutter.

TSP Bevel gears and pinions on pulverizing mills.



TSP gearing on dryer.

# ONLY THREE
## of many combinations

**HEAVY DUTY**
C-111 Combination Chain
and 14" x 8" AA-RB Buckets

**MEDIUM DUTY**
830 Ley Bushed Chain
and 12" x 7" AA Buckets

**LIGHT DUTY**
C-188 Combination Chain
and 8" x 5" A Buckets

## *Moline Buckets and Chains*

TAKE ADVANTAGE of Moline's wide selection of buckets and chains. Apply exactly the right combination of bucket and chain to meet the specific conditions of your elevating job and matched to your service load requirements.

Moline "matched-to-service" buckets and chains can replace costly specials and provide extra long service life.

Moline Buckets, made with reinforced corners and uniformly thick walls, are stronger than steel buckets of equal gauge. Six models are available in either Malleable or Promal. Chains include Combination, Detachable, Pintle, H-type and Ley Bushed. Buckets may be ordered either plain or punched for chain or belt mounting.

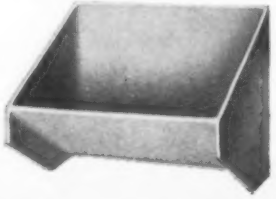
*Call your local authorized Moline distributor today! He will be glad to recommend several efficient chain-bucket combinations to suit your purpose—and to give you comparative costs and service estimates.*

# Moline Chains

Moline Malleable Iron Company
St. Charles, Illinois

**CAST "AC" BUCKETS**
Designed for cement, lime and other dry, powdery materials. High fronts provide extra load capacity. Hooded backs reinforce buckets and permit closer spacing. Extra thickness of metal at wear points gives extra long service. Four sizes available . . . plain or punched for chain attachments.

**"CONTINUOUS OPERATION" BUCKETS** for elevating stone, gravel or coal provide large capacity at slow speed. Flanges on the bottom form a chute for material discharged from the following bucket. Available in Malleable or Promal.



## Distribution Points Planned By Permanente Cement At Two Hawaiian Sites

Modern bulk cement distribution plants will be established in Hilo (Hawaii) and Kahului (Maui) by Permanente Cement Company, according to a statement released by Henry J. Kaiser, founder-chairman of the company. Each of the twin plants will have a storage capacity of 2,000 bbl. of cement, and they will be the first such installations on these islands. The proposed facilities will raise the number of Permanente distribution points to 13.

The two plants, representing a combined investment of more than $200,000, are expected to be in operation by December. The necessary equipment is on order, and bids from contractors for construction are presently being reviewed. Bulk cement from Permanente's new Waianae producing plant on Oahu will be barged to the Hilo and Kahului facilities.

Permanente Cement is one of the major members of Henry Kaiser's complex of industries. In addition to its Waianae installation, the company has producing plants at San Jose and Lucerne Valley, Calif., and at Bellingham, Wash.

### Pneumatic Unloader Trucks Introduced by Calaveras

A pneumatically equipped bulk cement truck which unloads through a pipeline directly into customers' cement storage silos has been introduced in Oregon by the Calaveras Cement Company, a division of The Flintkote Company. The truck operates out of the Calaveras distribution plant at Springfield, Oreg., and is the first to be placed in operation on the Pacific Coast by a cement manufacturer.

The Fruehauf equipment is completely self-contained, carrying its own compressor for air supply. Calaveras has two additional units for California and Oregon use.

### Arizona Asbestos Operation Furnishes Top-Quality Fiber

Asbestos mined near Globe, Ariz., and processed at the Metate Asbestos Company's mill nearby, if it is top-grade, sometimes reaches the ultimate American consumer *via* Europe. According to Jack Neal, president of Metate, fiber of the best quality is sent to Switzerland, where it is made into filter pads for American citrus juice, pharmaceutical, beer, and wine firms.

The Metate mill was built 18 months ago at a cost of more than $100,000. Employees in the plant, as well as in the mine at White Mountain Apache Reservation, are all members of the Apache tribe.

---

For the first six months of 1961, Basic Incorporated reports earnings of $545,533 on sales of $11,580,296 *vs.* 1960 net income of $980,439 on sales of $14,539,628. Earned per share: $.43 compared with $.79 in the 1960 period. Decreased earnings resulted from depressed levels of steel production.

*New* HINGED PLATEGRIP

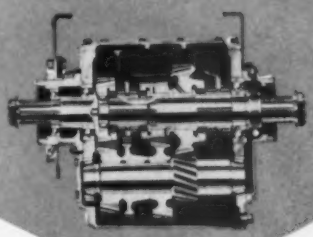
Recommended for mines, quarries, construction work, storage yards—wherever belt length must be frequently changed. Hinged Plategrip Fasteners make a strong, flexible joint in heavy duty conveyor belts, trough naturally, ride smoothly over pulleys, yet can be separated by simply pulling the hinge pin. *Improved* design takes the new smaller diameter self-lubricating nylon sheathed cable hinge pins. No. X500-1 single bolt fasteners and No. X500-3 3 bolt fasteners (used at outside edges) to reinforce edges and aid troughing.

*Write for Catalog*

**ARMSTRONG-BRAY & CO.** 5394 NORTHWEST HIGHWAY CHICAGO, ILLINOIS

*Enter 37-A on card, page 183*

- High Capacity
- Low Initial Cost
- Reduced Maintenance
- Flexibility of Ratios



for medium-heavy duty trucks and tractors, specify one of the eight

**Fuller '65 Series**

**3-Speed Auxiliary Transmissions**

available from all truck manufacturers upon specification. *Top-mounted power take-off optional.*

**'65 SERIES (Medium-heavy-duty) RATIOS**

| | SPLITTER RATIOS | | DEEP REDUCTION |
|---|---|---|---|
| MODEL | High | Intermediate | Low |
| 3-A-65 | .754 | 1.00 | 2.221 |
| 3-B-65 | .804 | 1.00 | 1.239 |
| 3-C-65 | .754 | 1.00 | 1.239 |
| 3-D-65 | .804 | 1.00 | 2.221 |
| 3-E-65 | .804 | 1.00 | 1.74 |
| 3-F-65 | .754 | 1.00 | 1.74 |
| 3-G-65 | 1.00 | 1.32 | 2.221 |
| 3-H-65 | 1.00 | 1.32 | 1.74 |

**For the right transmission for every operation**

*Specify*

*Specify the MODEL*

**FULLER TRANSMISSION DIVISION**

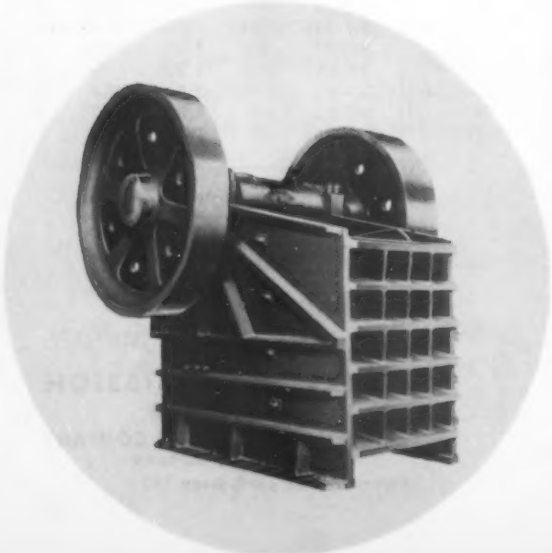
**EATON MANUFACTURING COMPANY**

KALAMAZOO, MICHIGAN

*Enter 37-B on card, page 183*

# DIAMOND/DURABILITY

## More than a million tons of rock crushed .



Yes that's right! More than a million tons of hard rock have been crushed by the Diamond 36 x 48 jaw crusher circled above—and maintenance and repairs have totalled *under seven/one-hundredths of a cent per ton* (not counting lubricants)!

"Not one of our other makes of crushers can compare with the Diamond for trouble-free operation" says Mr.

Diamond makes jaw crushers in 12 sizes; from 6 x 12 to 44 x 48, with capacities ranging from 1½ to 700 tons per hour.

# . at less than $0.0007 per ton maintenance

Joe Gloster, president of the owner company, Spring House Quarry, suburban Philadelphia.

Diamond jaw crushers are built to handle hard rock . . . provide uniform sizes . . . and produce the tonnage per square foot of jaw area that makes for a profitable investment. See your Diamond distributor for complete information on any one of the 12 sizes now available.

Mr. Joe Gloster
President
Spring House Quarry

DIAMOND

**DIAMOND IRON WORKS**

*DIVISION*

**GOODMAN MANUFACTURING COMPANY**

*Halsted Street and 48th Place • Chicago 9, Illinois*

**Enter 38 on card, page 183**

Columbia

CRUSHER PARTS

wear longer to earn greater profits

Operators who already have discovered the extra life in Columbia crusher parts don't ask the reasons why. They are satisfied to pocket the savings and let it go at that.

But, for the inquisitive who must know why Columbia replacement parts wear longer, here's the answer: Columbia gyratory parts are the result of many extra manufacturing precautions and controls which result in an extra quality, fine grained product. The use of Olivine sands in molds produces smooth surface appearance. The painstaking Columbia duplex furnace process, reduces impurities and improves strength. Specially formulated Armor-Tough manganese steel grows tougher and tougher as metal crunches rock. Precisely controlled casting and machining of Columbia gyratory parts adds to the exceptional service they give.

Compare Columbia with the parts you have been using. See for yourself that extra manufacturing control at Columbia can put extra profits in your pocket.

Most popular items in stock. Prices are competitive.

Columbia

COLUMBIA STEEL CASTING CO., Inc.

N. W. 10th & JOHNSON • PORTLAND, OREGON

1213 N. HIGHLAND AVENUE
LOS ANGELES 38, CALIFORNIA

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CLAYTON 5, MISSOURI

413 EMPIRE BUILDING
PITTSBURGH, PENNSYLVANIA

645 CARR STREET
DENVER 15, COLORADO

Enter 40 on card, page 183


### Purchase of National Cement Planned by Woodward Iron Co.

Directors of the National Cement Company, Birmingham, Ala., and the Woodward Iron Company, Woodward, Ala., have approved plans for the latter's acquisition of the cement firm. Shareholders of the two concerns will vote on the plan in the near future.

Annual capacity of National Cement, which serves northeastern Alabama and northwestern Georgia, is 1,500,000 bbl. No changes in management are planned if the acquisition is approved.

### New England Lime Company Sold to Charles Pfizer Co.

The sale of the New England Lime Company, Adams, Mass., and its subsidiary, Nelco Metals, Canaan, Conn., to Charles Pfizer & Company, New York, has been announced. Sale price—300,000 shares of Pfizer common stock—amounted to more than $12 million.

New England Lime has plants in Adams and Canaan, Conn. Its subsidiary, Nelco Metals, produces high-calcium lime, magnesium lime, and hydrated lime; asphalt filler; and acoustic tile.

### Lehigh and Mitchell, Ind. Honor Second U. S. Astronaut

Mitchell, Ind., and the *Lehigh News Conveyor,* official organ of the Lehigh Portland Cement Company, have given appropriate recognition to the feat accomplished by Capt. Virgil I. Grissom in his space flight.

Captain Grissom, a native of Mitchell, is honored by a large highway sign proclaiming Mitchell as the home of Astronaut Virgil Grissom. The illuminated sign also bears a large portrait of the hero.

As the son-in-law of Claude Moore, a Lehigh employee at the Mitchell plant for 43 years, Captain Grissom rated a 4-page feature in the August issue of the *Conveyor.*

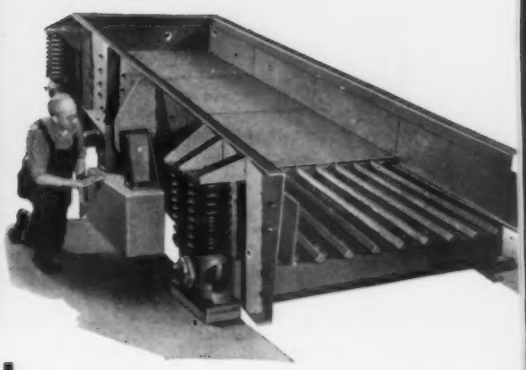
---

Net earnings for the first half year for Ideal Cement Company were $7,475,486 (67 cents per share), up from $7,155,055 (64 cents per share) in 1960. Sales totalled $56,-558,953, compared with $51,838,-567 last year.




Enter 41 on card, page 183 →

# BIG SCREEN EXPERIENCE!



Big tonnage units like this heavy duty vibrating feeder solve the toughest screening problems. Built to standards developed through years of experience, these units withstand brutal battering day after day. They work hard, earn more, and last a lot longer. How come?

*They're built by the experts!*

And Allis-Chalmers builds an ever-improving, complete line of horizontal and inclined vibrating screens. Famous names like *Low-Head* horizontal, *Aero-Vibe* and *Ripl-Flo* inclined screens cover the full range of applications — scalping, sizing, rinsing, washing, media drain and dewatering.

*Ask your A-C representative for help with your screening requirements. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wis.*

A-1530

ROM, Low-Head, Aero-Vibe and Ripl-Flo are Allis-Chalmers trademarks.

**ALLIS-CHALMERS**

A-1530

## International Min. & Chem. Ups Expansion Expenditure On Canadian Potash Mine

An additional $10,000,000 has been earmarked to be spent on the expansion of International Minerals and Chemical Corporation's potash mine development at Esterhazy, Sask., Canada.

This added plant investment will bring the total expenditure to nearly $40 million and will boost the output potential to 1,200,000 tons of potash product annually.

Initial production from the Esterhazy shaft is expected by early summer of 1962, and operation at the 1,200,000-ton rate is to begin in January, 1963.

● Irving Crown (left), vice-chairman, Material Service Division, General Dynamics Corp., presents a check for $2,500 to Robert Einaudi, who won the Material Service Foundation's annual fellowship for research on new architectural forms in concrete at Massachusetts Institute of Technology. Also present were: B. C. Willis (second from left), Chicago superintendent of schools, and W. J. Bachman, retiring president, Chicago chapter, American Institute of Architects.

### That's the Way They Do It In Texas—Sometimes

According to word from Dawn, Tex., a blasting crew down there got an unexpected assist from the elements at a local gravel pit (sic).

Workmen were about ready to detonate a 2,132-lb. charge of dynamite, when BOOM! — a bolt of lightning did it for them. Minutes before that, O. L. Allen had walked away from the charge. Nice timing!

Now we'd like to know the company's name and the type of operation. Dawn newspapers, please note. (Sure it wasn't a *quarry*?)

## June Construction Awards Show Notable Gains In Apts., Business Bldgs.

During June, the construction outlook brightened further. Notable gains were registered in contracts for nonresidential and residential buildings, according to F. W. Dodge Corporation. Contracts for all future construction totaled 4 percent higher than the same month last year, amounting to $3,602,176,000.

Dodge economists pointed out that the contracts showed a more-than-seasonal increase, with the Dodge Index rising to 281. It was at 257 in May, 261 in April, and 272 in June, 1960 (1947-49=100).

Residential contracts were up 5 percent over a year ago. Apartment buildings continued to show impressive gains, exceeding the year-earlier level by 28 percent while single-family houses were just slightly below last year. The number of dwellings represented by the residential contracts totaled 112,779—an increase of 3 percent over June, 1960.

Nonresidential buildings were up 10 percent, paced by sharp gains for industrial buildings, hospitals, and public buildings.

Heavy engineering was down 6 percent; a substantial gain in contracts for electric light and power systems was more than offset by a decline in contracts for streets and highways.

A summary of the latest figures is given in the table below:

| | June, 1961 | June, 1960 | % Change |
|---|---|---|---|
| Nonresidential bldg. | $ 1,221,087,000 | $ 1,110,144,000 | +10 |
| Residential bldg. | 1,558,129,000 | 1,482,668,000 | + 5 |
| Heavy engineering | 822,960,000 | 879,464,000 | — 6 |
| Total construction | $ 3,602,176,000 | $ 3,472,276,000 | + 4 |

| | 6 Mo. 1961 | 6 Mo. 1960 | % Change |
|---|---|---|---|
| Nonresidential bldg. | $ 5,992,063,000 | $ 5,802,347,000 | + 3 |
| Residential bldg. | 7,762,193,000 | 7,600,439,000 | + 2 |
| Heavy engineering | 4,465,440,000 | 4,171,042,000 | + 7 |
| Total construction | $18,219,696,000 | $17,573,828,000 | + 4 |

### ● Correction

In the editorial in the July, 1961, issue of PIT AND QUARRY it was stated that the new white cement plant of the Riverside Cement Company at Crestmore, Calif., described in that issue, was "believed to be the first anywhere to use the dry process." We have since been reminded of the fact that there are three dry-process white cement plants in Mexico.

---

Installation of the new electrostatic dust precipitator system now underway at the Bellingham, Wash., facilities of the Permanente Cement Company is expected to be completed late this summer. The system, which costs more than $250,000, is designed for 95 percent plus efficiency in filtering dust generated in the calcining stage of manufacture. Koppers Company, Inc., is building and installing the system.

---

St. Lawrence Cement Company has been awarded a $2,000,000 engineering contract for the Atlantic Cement Company's plant near Albany, N. Y., which reportedly will be the world's largest cement operation.

# ALLIS-CHALMERS

One-man, one-minute product control on these

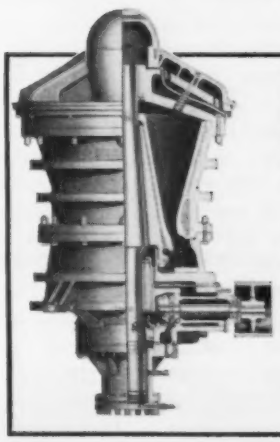
# brawny boulder busters!

***Hydroset* mechanism keys *Superior* crusher performance.** For crushing the hardest materials — year in, year out — *Superior* crushers have strength where it counts. They lead the field in dependability and continuous service and, at the same time, give you high capacity and low operating costs.

Best yet, these rock-rugged crushers do it with a flip of the switch. With *Hydroset* mechanism, it takes one man less than one minute for complete product control. This exclusive mechanism compensates for wear, retains initial setting or changes settings in less than 60 seconds. Clears jams just as easily. Slashes downtime and maintenance costs to the bone.

*You'll see all the top-profit advantages in Bulletin 07B7870A. For your copy, call your A-C representative or write* **Allis-Chalmers,** *Industrial Equipment Division, Milwaukee 1, Wisconsin.*

A-1329



Deep, curved crushing chamber minimizes slippage, provides acute crushing angle . . . maximum capacity. A flip of the **Hydroset** switch changes crusher settings in less than a minute. No loss of production hours.

*Superior* and *Hydroset* are Allis-Chalmers trademarks.

### Mission From Moscow: Cement+Monsoon=?

This bit of counter-espionage was recently reported by James J. Wadsworth in the weekly newspaper supplement *This Week Magazine*:

Several years ago, a whole year's supply of cement was shipped from Russia to Burma immediately before the monsoon season. When the rains started, the cement hardened into an unusable mess.

Last summer, the Soviet press proudly announced a large shipment of cement to Guinea. While it was standing on a dock in Liberia, awaiting transshipment, the torrential summer rains came. Again, the Soviet cement was ruined.

One can merely conjecture as to the fate of the Soviet Commissar for Cement. And on a larger scale, Mr. Wadsworth succinctly comments: "Moscow doesn't learn much from its mistakes."

### I.C.C. Grants Authority For Cement Trucking in East

Fourteen trucking companies have been given authority by the Interstate Commerce Commission to haul cement from 25 producing plants and storage points in Maryland, Pennsylvania, West Virginia, and the District of Columbia to points along the eastern seaboard. All but one of the trucking concerns are independent of railroad affiliation. The exception was made because of the railroad's "unsatisfactory financial condition" and its traditional "dependence upon cement traffic revenue."

The I.C.C. denied cement-hauling rights to trucking affiliates of four other rail companies. The grant giving authority to the 14 trucking concerns was justified by the commission as required by the "fundamental transportation requirements of a large basic industry."

For many years, almost all of the cement moved in the East has been transported by the railroads, the I.C.C. commented. Recent years, however, have seen the development of special truck tanks for cement haulage purposes.

### New Supplement Issued On Minerals of California

One of the most popular bulletins offered by the State of California's Division of Mines, *Minerals of California,* has been up-dated by a pamphlet entitled *Supplement to Minerals of California*. It contains additions to the state mineral localities from January 1, 1955, through December 31, 1957. Three previously unknown minerals were found during the 3-year period (galeite, gerstleyite, and nekoite); in addition, 23 new mineral species were listed.

The 46-page pamphlet is available at $1 (plus tax) per copy from The California Division of Mines, Ferry Building, San Francisco 11, Calif.

### Two More Firms Join Search For Potash Beds in Utah

Two drilling sites have been located in the Salt Valley area of Grand County (Utah) for exploration for recoverable potash. San Jacinto Petroleum Corporation, New York City, has signed an agreement with Utah Potash Company, a newly formed Salt Lake City concern, which involves a drilling program on the 30,000-acre site. Operations will be conducted by San Jacinto.

Utah Potash Company is headed by Dix R. Turnbow; Ted Beach is a major shareholder. Continental Oil is an 82 percent stockholder in San Jacinto.

The area of exploration is about six miles north of the potash reserves owned by Texas Gulf Sulphur. The latter firm is currently developing reserves at Cane Creek, where a $25,000,000 mill is to be constructed.

## Obituaries

BUFORD V. EVERETT, president of Everett Quarries, Inc., Plattsburg, Mo., died recently as a result of a heart attack. Although Mr. Everett has not been in good health for several years, he had been active, during the formative years, in promoting the National Agricultural Limestone Institute and the National Crushed Limestone Institute, now merged into the National Limestone Institute.

FRED F. LOY, 55, district engineer of the Portland Cement Association's Iowa district, suffered a fatal heart attack on July 3 at Clear Lake, Iowa.

Mr. Loy attended the University of North Dakota, being graduated in 1932 with a bachelor of science degree in civil engineering. He joined the Portland Cement Association in 1937 as general field engineer in the Des Moines district office. In 1948 he was named district engineer in charge of the Iowa office, the position he held at the time of his death.

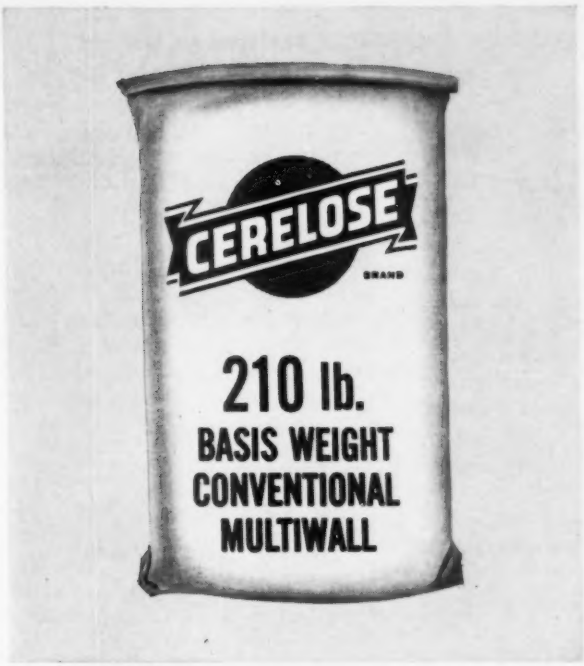
WALTER P. BOLAND, former vice-president of the Binghamton Crushed Stone and Gravel Company, Birmington, N. Y., died recently in that city.

GEORGE A. NICHOLSON, 78, a retired executive of the National Cement Company, Birmingham, Ala., died in a Mobile, Ala., hospital recently after a long illness.

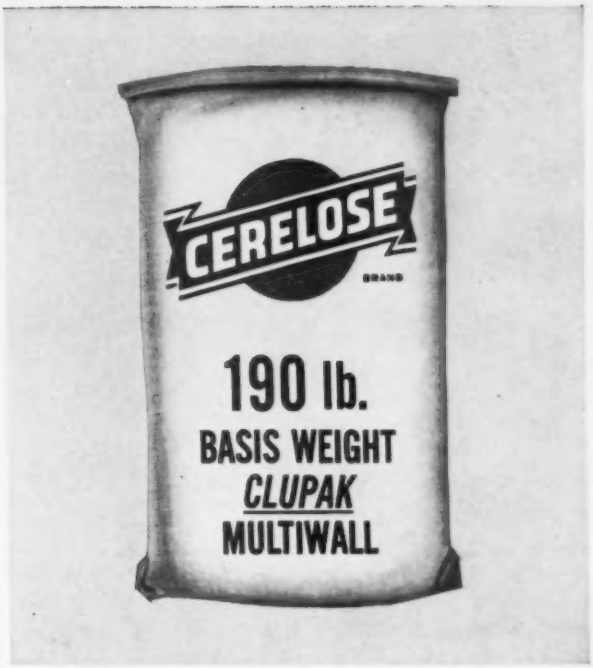
Mr. Nicholson was a co-founder of the cement firm and served as its president and later as board chairman until his retirement several years ago. Earlier in his career he had been head of the English department of Depauw University, Greencastle, Ind.

OTTO L. PELHAM, assistant treasurer of the Florida Portland Cement Division, General Portland Cement Company, died on July 21.

WILLIAM R. HASTIE, 54, owner and operator of Capitol Sand and Gravel, Sacramento, Calif., died recently in that city after a short illness.




**BEFORE:** 5-ply conventional kraft bag (4 plies of 40 lb. kraft and one 50 lb.)
***% of bags damaged: 1.5%***




**AFTER:** 4-ply multiwall CLUPAK extensible paper (2 plies of 40 lb., one 50 lb., one 60 lb.)
***% of bags damaged: 0.17%***

# CORN PRODUCTS CO. cuts bag damage 88%

## with *CLUPAK* extensible paper multiwalls

Loss of product in shipping, and consequent annoyance to customers, was a headache Corn Products Company wanted to remedy. CLUPAK extensible paper multiwalls, because they g-i-v-e to absorb strain and impact, sharply reduced bag breakage—a boon to customer relations.

In tests conducted last year by Corn Products Company, the normal damage rate of 9 bags per 600-bag car was reduced to only one bag in 600—using CLUPAK multiwalls!

Ask your paper salesman about a trial shipment of CLUPAK extensible paper multiwalls.

EXTENSIBLE CLUPAK PAPER **Compared to conventional kraft of equal basis weight has:**

- Up to 7 times more controlled machine direction stretch.
- 3 to 5 times greater ability to withstand impact and shock.
- 10 to 20% increase in cross direction stretch.
- 40% improved puncture resistance.
- Identical surface properties and printability.

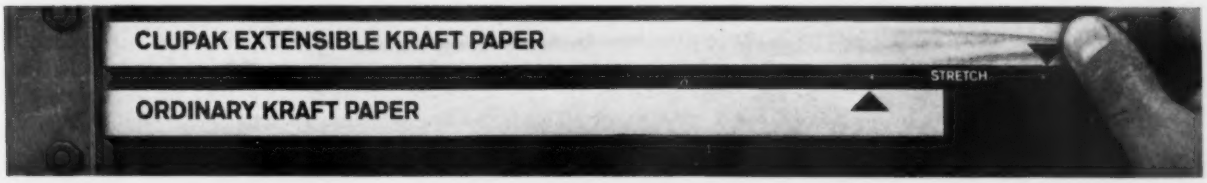
EXTENSIBLE CLUPAK® PAPER *

"it stretches to shrink your costs"

*CLUPAK, Inc.'s trademark for extensible paper manufactured under its authority and satisfying its specifications. CLUPAK, Inc., 530 5th Ave., N. Y. 36, N. Y.

*For information, contact the Clupak licensee nearest you:*

**ALBEMARLE PAPER MFG. CO. • CALCASIEU PAPER CO. • CONTINENTAL CAN CO., INC. • CROWN ZELLERBACH CORP. HUDSON PULP AND PAPER CORP. • INTERNATIONAL PAPER CO. • ST. REGIS PAPER CO. • UNION BAG-CAMP PAPER CORP. • WEST VIRGINIA PULP AND PAPER** • For Canadian and Foreign Licensees write Clupak, Inc., 530 5th Ave., New York 36, New York



One of the barges being reversed into position on the slipway of the Portfield Gravel Pits in southern England.

# Pit Barges Moved Overland By Special Carriers

MOVING overland two large barges intended for operation on gravel pits in southern England was a problem recently solved by Hill and Sons (Botley and Denmead) Ltd., of Botley, Southampton, by the use of a 56-wheel barge carrier specially adapted for this purpose.

The two barges, 84 ft. long by 20 ft. 8 in. wide (8 in. wider than the road), 13 ft. high over the deck house, and weighing 54 tons each, had been built in Gainsborough, Lincolnshire. They were floated around the English coast by an ocean-going tug to a point near the Chichester Bar entrance to Chichester Harbour, Hampshire, where they were taken over by a smaller tug and brought up to Dell Quay.

Here, both the barges were floated onto steel beams which had previously been laid on the hard at low water. They were then jacked up to permit a specially fitted semi-low barge-carrying outfit with 56 wheels at low tide to be reversed, for transport by road the distance of about five miles.

The front bogie of the transporter was a shortened 40-ton Rogers 24-wheel trailer, and the rear bogie was made up of two Rogers transporter back ends fitted together to incorporate the remaining 32 wheels. The whole unit worked on a cantilever system, so that the weight of the barge was evenly distributed over all the wheels. The power unit was a six-wheel, 80-ton Scammell tractor which had been fitted in Hill and Sons' own workshop with a new type 6LX Gardner diesel engine. The transporter tractor was built locally. Two other tractors with winches were used to help pull the loaded transporter off the beach.

To negotiate a right-angle turn at traffic lights, a spur road of steel plates and ties had to be built over the sidewalk and the grass parkway. The journey with the first barge took two hours, but the second barge was carried in one hour.

Upon arrival at the Portfield Gravel Pits, the barges were reversed into one of the pits onto a prepared slipway, where they were jacked off the transporter and let down onto rollers and blocks. They were then pushed into the water at the pit by a bulldozer, with a plate that had been suitably padded.

The entire moving project took about one week.

---

At Burlington, N. C., a permanent crushing-and-screening plant has been installed by the Superior Stone Company of Raleigh, a division of the American-Marietta Company.

## 50th Anniversary Marked By Safety Engineers Society

The American Society of Safety Engineers will observe its fiftieth anniversary on October 8, 1961. It is the oldest national safety organization in the United States.

It was founded as the United Association of Casualty Inspectors in 1911 by a number of insurance company inspectors in New York City, but its name was changed to the American Society of Safety Engineers in 1914, and the following year it was chartered by the state of New York.

As the scope of the society's activities expanded, its members decided they could best serve their purpose by working with the National Safety Council (founded in 1912), and in 1924 the society merged with the National Safety Council. It then became the Engineering Section of the Council.

The society remained a part of the Safety Council until 1947, when its membership again voted to re-establish itself as an independent organization, but to maintain affiliation with the council. The society remained housed in the offices of the Safety Council until 1959, when it opened its own headquarters at 5 N. Wabash Ave., Chicago.

Local chapters co-operate with other organizations in their communities to establish safety codes and practices, promote safety in schools, assist state and municipal authorities in establishing safety laws and ordinances, sponsor and provide guidance to local Junior Achievement groups, work with Civil Defense authorities, and promote fire prevention activities.

Among the officers now serving are George L. Gorbell, manager of safety and fire protection, Monsanto Chemical Company, president; and Michael F. Biancardi, manager of safety services, Allis-Chalmers Manufacturing Co., second vice-president.

---

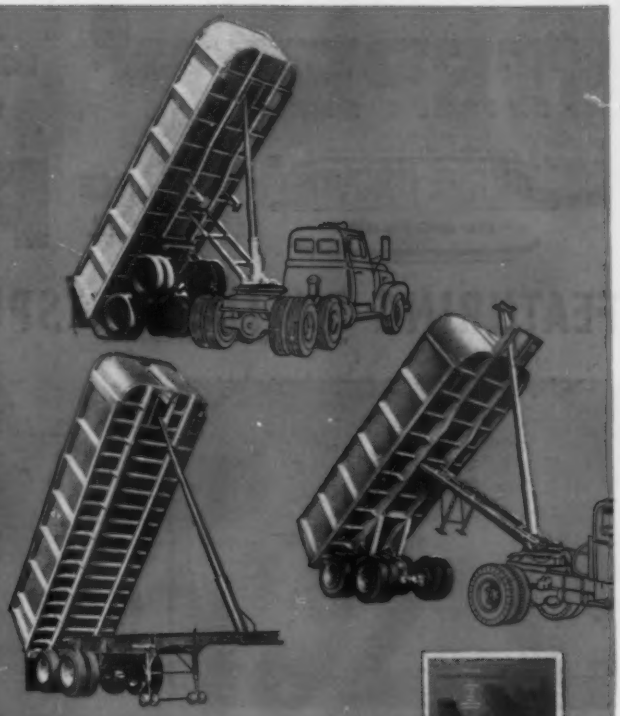
Property north of Pontiac, Mich., has been purchased by the Dundee Cement Company for a new distribution and service center. The new station will supply the increased demand for cement in the fast growing Detroit-Pontiac-Flint industrial corridor.

*for a look at a complete line of...*

# Dump Trailers

*check first with* TRAILMOBILE

Trailmobile offers you many types of dump trailers plus an unlimited variety of optional features to meet any requirement. Hoppers also available. Choose the ideal trailer and the most convenient financing plan. For complete information, call the Trailmobile office nearest you or use the coupon.



**TRAILMOBILE INC.**

Cincinnati 9, Ohio • Springfield, Mo. • Longview, Tex. • Fremont, Calif.

TR-950

Trailmobile Inc., 31st & Robertson, Cincinnati 9, Ohio • Please send folders covering dump trailers

*name*_____ *company*_____

*address*_____ *city*_____ *zone*_____ *state*_____

***Enter 47-A on card, page 183***

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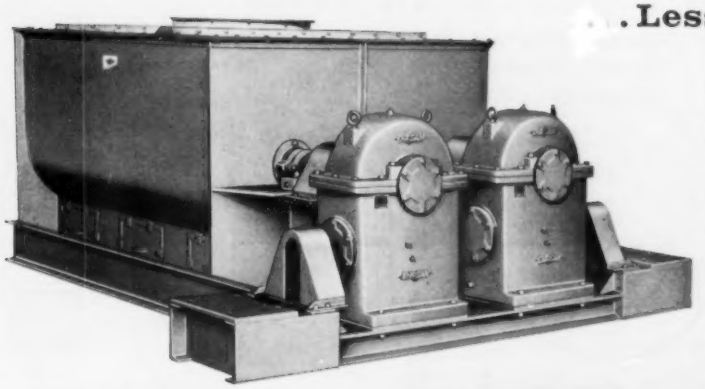
# EHRSAM® DOUBLE-BARREL MIXER

## Increases Productivity ...Lessens Costly Downtime



The Ehrsam double-barrel paddle mixer writes its own ticket for economy and increased productivity as a fast, heavy-duty machine for the intensive blending of dry, powdered or granular materials.

Precision engineering and construction cut costly, annoying downtime. Steel plate mixing barrels, adjustable stuffing box seals, heavy-duty roller bearing pillow blocks are only a few of the stress points designed to withstand abusive, day-after-day operation.

Combined with a surge hopper, charging hopper with scales, Ehrsam will program an automatic charging, mixing, and discharge operation to your specifications.

20 TO 120 CUBIC-FOOT MODELS AVAILABLE

**The J. B. EHRSAM & SONS MFG. COMPANY**

**Enterprise, Kansas**

DISTRICT OFFICES

Kansas City, Kans. / Denver, Colo. / Chicago, Ill. / San Francisco, Calif.
Fort Worth Tex. / Phoenix, Ariz. / Hastings, Neb. / Albuquerque, N. M.

EHRSAM **Enterprise, Kansas**

Please send new Ehrsam Mixer Catalog 8A. I am also interested in surge hoppers____; screw conveyors____; Dracon____; belt conveyors____; and bucket elevators____.

NAME_____

FIRM_____

ADDRESS_____

TOWN_____ STATE_____

E-M/2-661

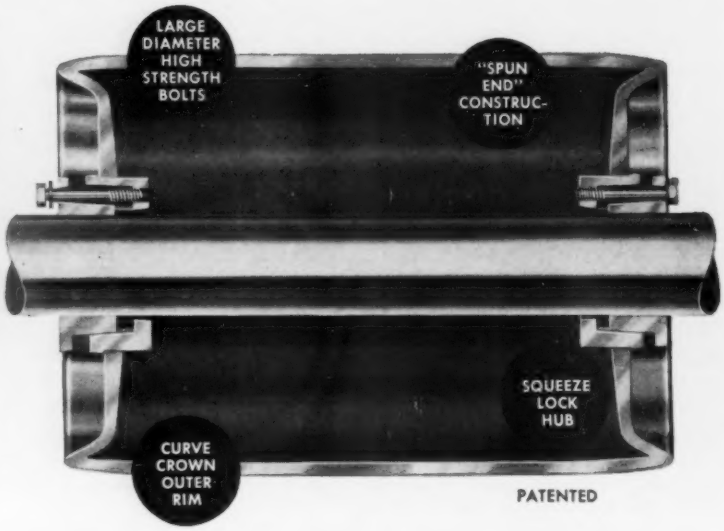
***Enter 47-B on card, page 183***

# STEPHENS-ADAMSON

CURVE CROWN by STEPHENS-ADAMSON

ONE PIECE ALL STEEL **PULLEYS**

## FEATURING EXCLUSIVE "SPUN END" CONSTRUCTION




### "SPUN END" CONSTRUCTION

Exclusive, one-piece, all steel "Spun End" construction eliminates weldments in areas of high stress concentration, a major source of fatigue, warping and trouble. "Spun End" construction allows the placement of maximum metal thickness at end plate bore reducing unit pressures of radial loads while providing thin plate flexibility to accommodate shaft deflections.

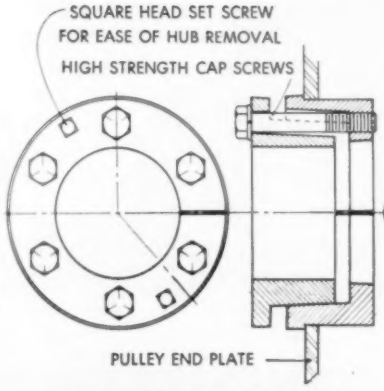
### CURVE CROWN DESIGN

Accurately formed CURVE CROWN on outer ends of rim eliminates conventional center peak — a high point for belt stretch and wear — while increasing belt training effect more than 100%.

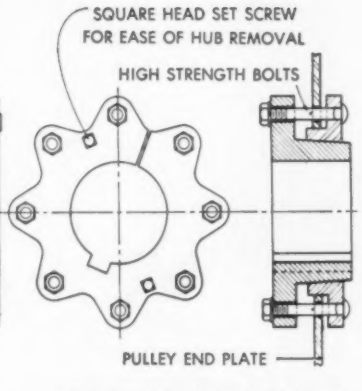
### SQUEEZE LOCK HUB

Revolutionary SQUEEZE LOCK Hub design effectively transfers loads from rim to hub and from hub to shaft. Hub design provides gripping power for full torque transmission without the use of keyways and eliminates distorting loads against pulley "Spun End." The SQUEEZE LOCK Hub accomplishes this by exerting equal locking forces in two directions — to both shaft and pulley end plates — through a self contained hub. The outer bushing expands against pulley end plate, while the inner bushing contracts against shaft by tightening six large diameter, high strength bolts.

## OUT PERFORMS ANY PULLEY EVER BUILT




SQUEEZE LOCK Hub furnished with STANDARD CURVE CROWN "SPUN END." Pulleys from 1" thru 4½" bore.




SQUEEZE LOCK Hub furnished with STANDARD CURVE CROWN Pulleys from 4½" thru 12" bore.

WRITE FOR BULLETIN 1160

S-A

ENGINEERED BULK HANDLING SYSTEMS
MATERIALS HANDLING PRODUCTS
SPEEDWALK® PASSENGER CONVEYORS
SEALMASTER® BALL BEARING UNITS
SPHERCO® BEARINGS & ROD ENDS

**PRODUCTS DIVISION**

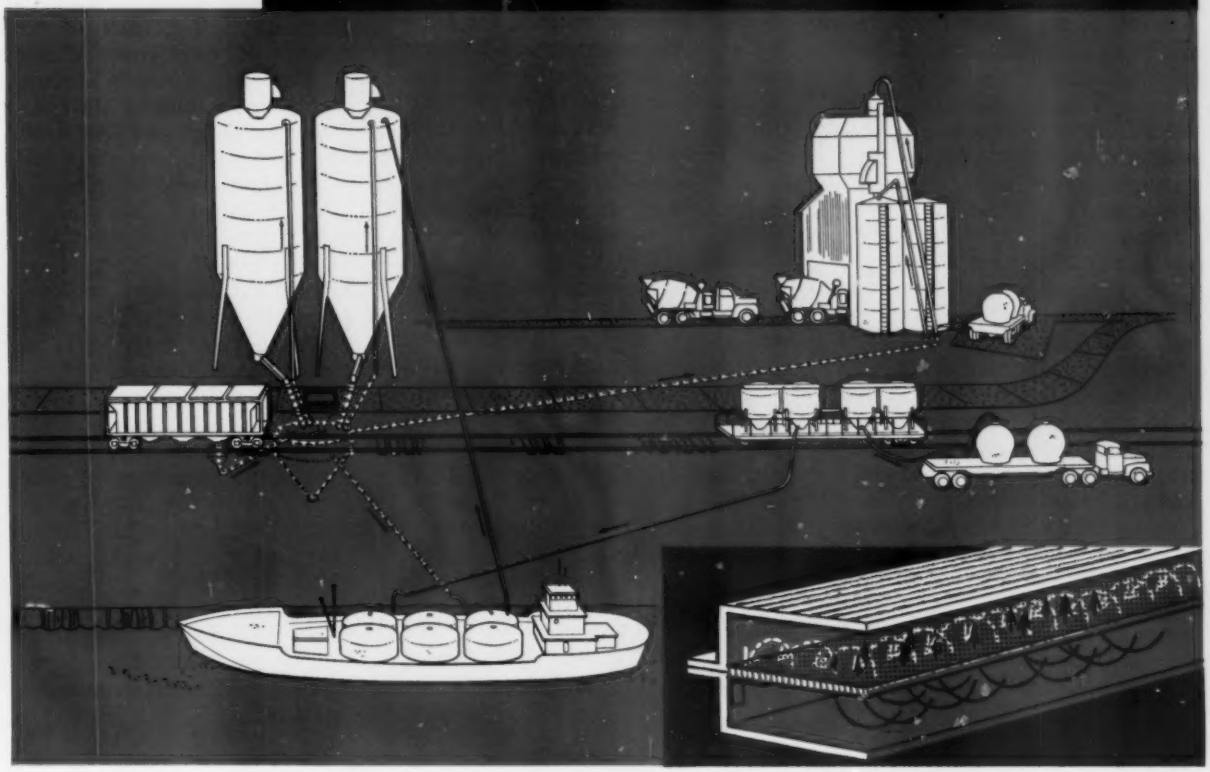
**STEPHENS-ADAMSON MFG. CO.**

GENERAL OFFICE & MAIN PLANT, 20 RIDGEWAY AVE., AURORA, ILL.

PLANTS LOCATED IN: LOS ANGELES, CALIF. • CLARKSDALE, MISS. BELLEVILLE, ONT. • MEXICO CITY, D. F.

HALLIBURTON **bulk handling** SYSTEMS

*. . . tailored to your needs* ***pneumatically!***



If the movement of dry bulk materials is important in your business . . . your plant . . . or operations within your plant . . . *you will profit* with some of the material handling ideas shown in the drawing above.

This hypothetical arrangement illustrates the flexibility of Halliburton Pneumatic Bulk Handling Equipment and Systems. The heart of a Halliburton System in moving powdered, granular, and most pelletized materials, is in the air pressure pumps which move materials rapidly in a closed system.

Halliburton manufactures complete units for over-the-road and rail transport, as well as systems for marine installation. Complete design and turnkey installation of custom-engineered Pneumatic Handling Systems is also available from Halliburton.

*Find out how clean, efficient pneumatic materials handling can work for you! Contact your Halliburton Representative, or write direct to . . .*

SPECIAL PRODUCTS DIVISION

LOW COST MATERIAL ROUTING . . .
*anywhere you can run a pipe!*

**Halliburton**
COMPANY DUNCAN, OKLAHOMA

# Injury Experience Data For Sand and Gravel Plants in 1958

IN 1958 the sand and gravel industry in the United States was canvassed for injury experience and employment data on an industry-wide basis for the first time by the Federal Bureau of Mines. The submission of reports by the operators is on a voluntary basis.

A canvass was conducted on a sample basis for 1957 in which approximately 35 percent of the industry (on the basis of production) was requested to submit voluntary reports of their injury experience and employment data. The 1958 data represents the first report in a series to be published annually by the Bureau on injury experience and related employment data for the entire sand and gravel industry.

Operators of 6,333 plants amassed a total of 92,455,928 man-hours of employment, and recorded an overall (fatal and nonfatal) injury-frequency rate of 18.64 (0.27 fatal, and 18.37 nonfatal) per million man-hours of exposure to occupational hazards.

Accidents at sand and gravel plants caused 25 fatal and 1,698 nonfatal injuries. On the nonfatal injuries, 49 caused permanent partial disabilities and 1,649 temporary total injuries. No permanent total disabilities were recorded for the industry.

Injury experience was tabulated by work location or type of plant, *i.e.*, stationary, portable, and "other." (The type was not stated, and combined reports were submitted for stationary and portable plants.) Stationary sand and gravel plants achieved the most favorable frequency rate per million man-hours of exposure in 1958. The frequency of all injuries at stationary plants was 18.15 per million man-hours; at portable plants, 18.54; and at "other" plants, 19.73.

Fourteen (56 percent) of the 25 fatalities reported by the sand and gravel industry during 1958 occurred at stationary plants; 8 (32 percent) were reported by portable plants; and 3 (12 percent) by "other" operations.

Of the fatalities which occurred at stationary plants, one each was caused by falling of ground, falling material, handling material, the fall of a person, machinery, and fire or suffocation from a fire; 3 each resulted from haulage accidents and miscellaneous causes; and 2 resulted from electrical accidents. Principal causes of nonfatal injuries at stationary plants were: handling materials, falls of persons, machinery, and haulage.

Falls of persons and haulage each caused 3 fatal accidents at portable sand and gravel plants; 1 was electrocuted, and 1 died from a "miscellaneous" cause. At portable plants the principal causes of nonfatal injuries were: handling materials, haulage, machinery, and falls.

The 3 fatal injuries at "other" plants were caused by haulage, electricity, and an undetermined cause; nonfatal injuries were chiefly due to handling materials, machinery, falls of persons, and haulage.

California and Texas each reported 4 fatalities; Alabama, Kentucky, Ohio, Tennessee, and Utah, 2 each; and Colorado, Florida, Illinois, North Carolina, Virginia, West Virginia, and Wisconsin 1 each. California reported the greatest number of nonfatal injuries, followed by Minnesota, Wisconsin, and Michigan.

The following states accumulated approximately 50 percent of the man-hours of employment during 1958: California, Texas, Wisconsin, Ohio, Minnesota, Illinois, Michigan, Arkansas, Louisiana, and New York. Among this group, four states had very favorable injury-frequency rates (fatal and nonfatal combined)—Louisiana, 5.35; Texas, 8.90; Arkansas, 10.72; and New York, 11.66.

Reports indicated that sand and gravel plants, when classified by size of operation (men employed), reported a greater frequency of injuries at plants which employed 1 to 14 men.

The trunk was the part of body most frequently injured at all three types of plants, followed by leg (including ankle), hand and finger, foot and toe, and arm (including wrist) injuries.

When all injuries were classified by the nature of injury, it was found that strains, sprains and dislocations, and bruises and contusions were the most frequent.

**Table 1.—Salient Statistics on Injuries, Injury Rates, and Employment at Sand and Gravel Plants in the United States, 1958**

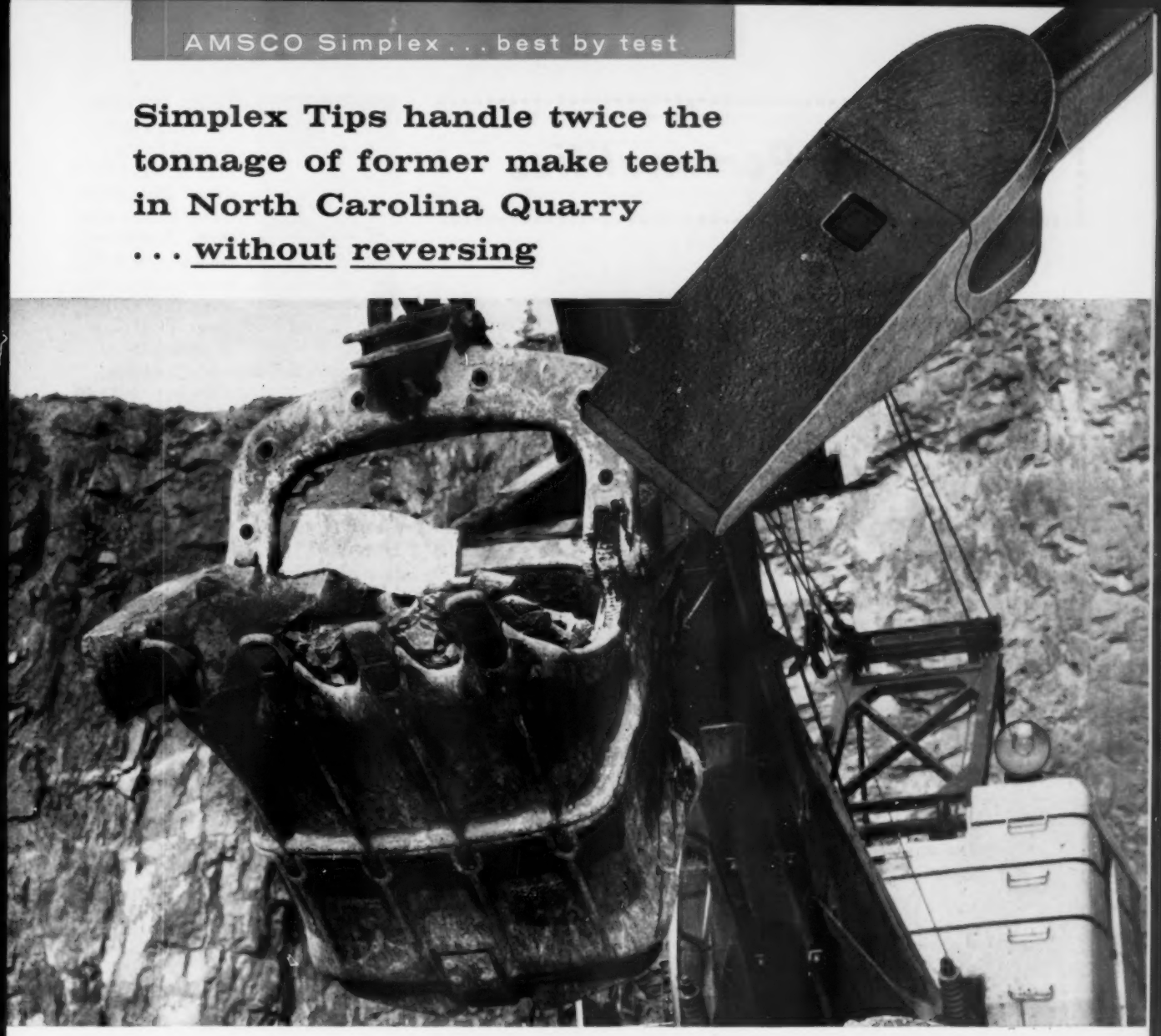
| | Production and Development Workers | Office-workers | All Employees |
|---|---|---|---|
| Number of injuries: | | | |
| Fatal | 25 | — | 25 |
| Nonfatal: | | | |
| Permanent total | — | — | — |
| Permanent partial | 49 | — | 49 |
| Temporary | 1,649 | 2 | 1,651 |
| Total | 1,723 | 2 | 1,725 |
| Frequency rates, per million man-hours: | | | |
| Fatal | 0.27 | — | 0.25 |
| Nonfatal | 18.37 | 0.32 | 17.21 |
| Total | 18.64 | .32 | 17.46 |
| Severity rates, per million man-hours: | | | |
| Fatal | 1,622 | — | 1,519 |
| Nonfatal | 856 | 7 | 802 |
| Total | 2,478 | 7 | 2,321 |
| Active plants | 6,333 | — | 6,333 |
| Men working daily | 51,122 | 3,310 | 54,432 |
| Average days active | 211 | 221 | 211 |
| Man-days worked | 10,763,205 | 733,874 | 11,497,079 |
| Man-hours worked | 92,455,928 | 6,303,979 | 98,759,907 |
| Average hours per man per day | 8.59 | 8.59 | 8.59 |
| Average hours per man per year | 1,809 | 1,905 | 1,814 |



Enter 51 on card, page 183

AMSCO Simplex . . . best by test

# Simplex Tips handle twice the tonnage of former make teeth in North Carolina Quarry . . . without reversing



Digging is rough in a North Carolina limestone quarry and shovel tooth wear is a real problem. To solve this wear problem several sets of a competitive 2-part teeth were tried. The shovel handled six to seven thousand tons during the life of these tips. Two sets of Amsco Simplex were also tested in the same pit, on the same shovel. The first set of Simplex tips dug 12,445 tons *without being reversed.* The second dug 13,920 tons *without reversing.* Twice the tonnage of competitive teeth tested. In addition the owner stated that the Simplex teeth had a better fit between the adapter and dipper and it took less time to change tips.

If you are experiencing costly dipper tooth wear, order a set of Amsco Simplex Teeth and we think you will find them "best by test." If you don't know your nearest Amsco dealer, write us, and we'll send you his address plus a copy of Amsco's Buyer's Guide for Simplex Teeth.

**Amsco Cast Manganese Steel Dippers**

You can be sure of long and dependable service even under the most abusive conditions when you specify an Amsco Cast Manganese Steel Dipper for a new or used shovel. Sizes from ¾ to 12 cu. yd.

# AMSCO

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILLINOIS

AMERICAN Brake Shoe COMPANY

Other plants in:
Denver • Los Angeles • New Castle, Delaware
Oakland, California • St. Louis
in Canada: Joliette Steel and Manitoba Steel Foundry Divisions
in Mexico: Amsco Mexicana, S.A.

211

# Industry Personalities

WILLIAM W. KARL has been appointed vice-president of Nytralite Aggregate, Inc., a newly formed subsidiary of New York Trap Rock Corporation. Mr. Karl was formerly president of Lehigh Materials Company, Tamaqua, Pa., producers of lightweight aggregates.

RICHARD J. MURPHY has been appointed technical service manager at the New York office of the Universal Atlas Cement Division, U. S. Steel Corporation, effective August 16. Mr. Murphy's duties will be to service the division's New York, Philadelphia, Boston, and Albany sales territories in a technical capacity.

J. L. Dwyer

JOHN L. DWYER has been named manager of the National Gypsum Company's Phoenix, Ariz., sales district.

Mr. Dwyer goes to his new post from Boston, where he has served as assistant district sales manager since 1954.

KEITH M. CALLANAN, Albany, N.Y., has been elected president of the Callanan Road Improvement Company, South Bethlehem, N.Y.

J. REID CALLANAN, Londonville, N.Y., president of the company since 1955, has become chairman of the board.

THOMAS P. STANTON has been named exclusive sales agent by the North State Pyrophyllite Company, Inc., Greensboro, N.C., for the sale of PROPAC and PACO products to the steel industry.

For the last 17 years he was associated with Basic Incorporated of Cleveland, Ohio.

Bill Bryant

BILL BRYANT has been appointed engineer-director of the Florida Limerock Institute. He will have his headquarters at the offices of the institute in Ocala.

For the last 21 years he has served the city of Jacksonville in various posts, most recently as city engineer.

G. DONALD SCHAUB was elected counsel and assistant secretary by the board of directors of The Arundel Corporation, Baltimore, Md. Mr. Schaub has been with the firm since 1940.

ARNOLD B. BROWN JR. is the new manager of works accounting for Permanente Cement Company, Oakland, Calif. He will be responsible for the production accounting activities at each of Permanente's four cement producing plants, and will continue to supervise the company's cost analysis section at Permanente.

The following members of the Marquette Cement Manufacturing Company board of directors were elected recently: HENRY L. HILLMAN (president, Pittsburgh Coke & Chemical Company, formerly a director, Green Bag Cement Company); JANSEN NOYES SR. (Hemphill, Noyes & Company and a director, North American Cement Corporation); and ALBERT M. ANDREAS (chairman and a director, North American).

D. Bernard

DAVID BERNARD has been elected senior vice-president of the Medusa Portland Cement Company. Earlier in his career he had been associated with the Container Division of Dewey & Almy Chemical Company, Cambridge, Mass.

WILLIAM S. ZIEGLER has been elected president of the Inland Cement Company, Edmonton, Alta., Canada, succeeding W. LESLIE FORSTER. The latter is now chairman of the board.

ALLAN P. TAYLOR is the new president of the Ohio River Sand Company, Inc., Louisville, Ky., succeeding Chester P. Hegan, who has become chairman of the board.

HARRY C. ALDRICH, who has been treasurer for six years, was named vice-president and treasurer.

J. EDWIN RANKIN, division sales manager, was elected secretary.

H. H. BISHOPRIC was recently promoted to the post of secretary of Pacific Cement and Aggregates, Inc., San Francisco, Calif.

A. R. MASON was named assistant secretary and assistant treasurer of the corporation.

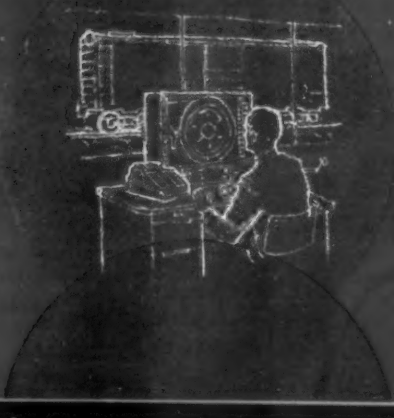
PAUL CHAPDELAINE has been elected executive vice-president and general manager of the St. Lawrence Cement Company, Villeneuve, Que., Canada. He was formerly secretary-treasurer of the firm. In his new office he succeeds Dr. Bernard Ulrich, who is now president and a director of the Atlantic Cement Company.

PAUL DUNCAN, vice-president, treasurer, and assistant secretary, and LEROY A. SMITH, controller, both of the Marquette Cement Manufacturing Company, have been elected to membership in the Controllers Institute of America.

**Have you analyzed your weighing operations lately?** Weighing of raw materials, goods in process and finished products is big business. And while you've probably automated other areas, you may not realize what Fairbanks-Morse Electronics Weighing can do for you. ● Chances are your present weighing operation lends itself to the speed and efficiency of an F-M Electronic System. You will realize impressive savings in time, labor and material... money savings that can add substantially to your profits! ● Fairbanks, Morse knows the weighing business—we've been in it for 131 years! We've pioneered precision weighing instruments of all types, and we are the leaders in the ever-expanding field of electronic weighing. To meet the need for fast, modern weighing of any liquid or solid, Fairbanks, Morse offers a wide range of standard electronic weighing systems plus custom-designed installations. ● The F-M Batchetron, for example, electronically weighs and batches a number of liquids or solids—in sequence or simultaneously—by means of manual or punched card control. Other F-M Electronic systems quickly weigh trucks and railroad cars. In each of these cases you can readily see the obvious savings in time . . . and in money. ● If weighing plays an important part in your operation, you will profit from more information about F-M electronic weighing systems. Please write: **Electronics Division; Fairbanks, Morse & Co.; 100 Electra Lane; East Station, Yonkers, New York.**

*ELECTRONICS DIVISION*
**FAIRBANKS MORSE**
A MAJOR INDUSTRIAL COMPONENT OF
**FAIRBANKS WHITNEY**

# *A MESSAGE TO MANAGEMENT FROM FAIRBANKS-MORSE ELECTRONICS DIVISION...*



**Series 600 Batchetron**
Weighs out pre-set amounts of any material used in batching systems. High speed action insures positive cut off of ingredient flow. Improved electronic weight sensing circuit provides long, accurate trouble-free service.

**Model CR**
Versatile weighing and printing instrument for a wide variety of applications. Location convenience—this instrument can be placed within a radius of 500 feet from scale platform, thus offering weight records at a central plant.

**Model Q—High Speed Weigher**
Maximum speed—maximum accuracy for weighing materials in motion. Equipped with read-out feature and built-in memory, to transmit weight records into the most modern computers, printing devices, tape and card punch machines.

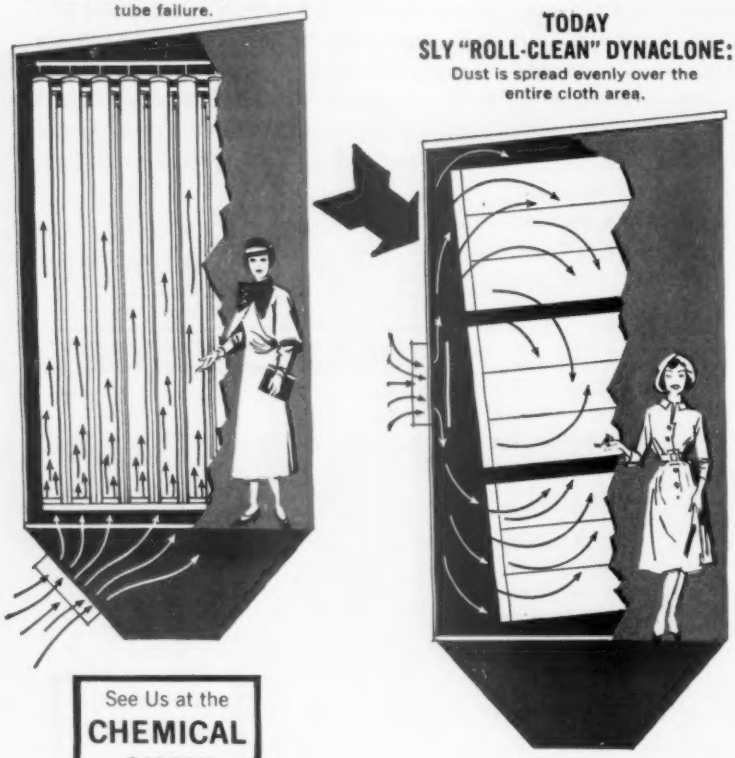
*NEW DIMENSIONS IN ELECTRONIC DEVICES*

## Check the Advantages of Dynaclone® Dust Filters

SINCE 1874 SLY

**1930's**
**SLY TUBE-TYPE FILTER**
Dust load was concentrated at certain points, causing premature tube failure.

**TODAY**
**SLY "ROLL-CLEAN" DYNACLONE:**
Dust is spread evenly over the entire cloth area.



See Us at the
**CHEMICAL SHOW**
Booth 73

# 2 TO 3 TIMES LONGER FILTER BAG LIFE

Three factors play a part in longer Dynaclone filter bag life — as proved on the most demanding applications. (1) Dynaclone construction and low air-velocity design insure even distribution of dust. (2) "Resist-O-Wear" bags have 3-section design for greater basic bag strength. (3) Dust is removed from bags by reverse cleaning air. No shaking — no abrasion.

There are other reasons why the "Roll-Clean" Dynaclone sets an unmatched performance pace. Flat bag design means 20 to 40% more cloth in a given space — greater capacity per cubic foot of filter. The Dynaclone is automatically self-cleaning. It operates continuously, provides constant uniform suction at dust sources for complete collection.

Check *all* the Dynaclone advantages . . . *Send for 36-Page Catalog 104.*

"Roll-Clean" Dynaclone: Patents 2,867,289, 2,938,598. "Resist-O-Wear" Filter Bags: Patent 2,959,247.

**THE W. W. SLY MANUFACTURING CO.**

4745 Train Avenue, • Cleveland 1, Ohio • Offices in Principal Cities • Overseas Licensees: Andrew Air Conditioning Ltd, London S. W. 1, England • Mideco Pty. Ltd., Nunawading, Victoria, Australia

*Enter 54 on card, page 183*

J. H. Carnathan

J. H. CARNATHAN has been named manager of purchasing services for Vulcan Materials Company, Birmingham, Ala.

He has been with Vulcan and its predecessor, Birmingham Slag Company, for the last 21 years.

RUSH MUSE has been named production manager for the New York Trap Rock Corporation. He fills the post formerly held by HENRY J. SCHWELLENBACH, vice-president, production.

FRED L. WAGNER has been appointed vice-president, customer relations, for Universal Atlas Cement. In this newly created position, Mr. Wagner will devote his activities to added and closer contacts with the construction industry.

At the same time, JAMES E. TAYLOR was named manager of sales, Eastern Region, a post formerly held by Mr. Wagner.

KENNETH A. CONNINGHAM, formerly assistant to the president, has been elected treasurer of Permanente Cement Company. He was also elected treasurer of Glacier Sand & Gravel of Seattle, Permanente Steamship, and Permanente Trucking, all subsidiaries of Permanente Cement Company.

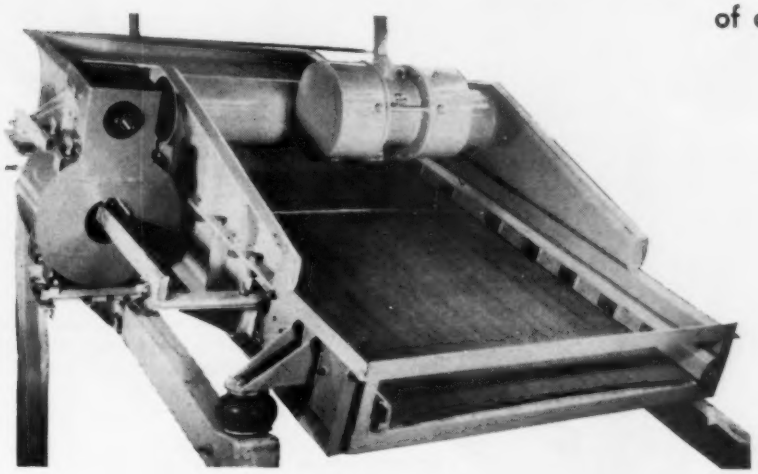
C. F. GREGSON, president, and D. C. PAGE, a vice-president, have resigned those posts at Southern Materials Company, Inc., Norfolk, Va., but retained their positions as directors and consultants.

JOHN H. MELVIN, formerly state geologist of Ohio, and recently general manager of the Pennsylvania Drilling Company, is now a consulting geologist, with offices in Pittsburgh.

# HANCO FLUX POWER

is the difference between success and failure when you screen damp material—as proven by Mr. Dale Dawson of the Franklin Stone Products Company, Hales Corners, Wisconsin, shown standing beside the 5′ x 16′ Double Deck Screen . . . both decks heated with HANCO FLUX POWER.

FLUX POWER SCREEN HEATING can guarantee you complete elimination of screen cloth blinding without interruption or "down time" for replacement of costly cables or leaf-type shunts.



PAT. APPLIED FOR

***For your next screen-heating installation . . . SPECIFY HANCO FLUX POWER — supplied as standard equipment by all major screen manufacturers.***

★ **MORE CLOTH HEAT** ★ **LOWER POWER COST** ★ **MAINTENANCE FREE**
★ **5 YEAR GUARANTEE** ★ **WATERPROOF** ★ **DUSTPROOF**

**For Abrasive Materials**

**AVAILABLE WITH EITHER TYPE TENSIONING RAIL**

**For Non-Abrasive Materials**

Hanco

## HANCO INTERNATIONAL

**A DIVISION OF HANNON ELECTRIC CO.**

**Canton 7, Ohio, U.S.A.**
**Cable Address: HANCO**

**Wibautstraat 6**
**Amsterdam, Holland**

# DENVER Spiral Classifiers

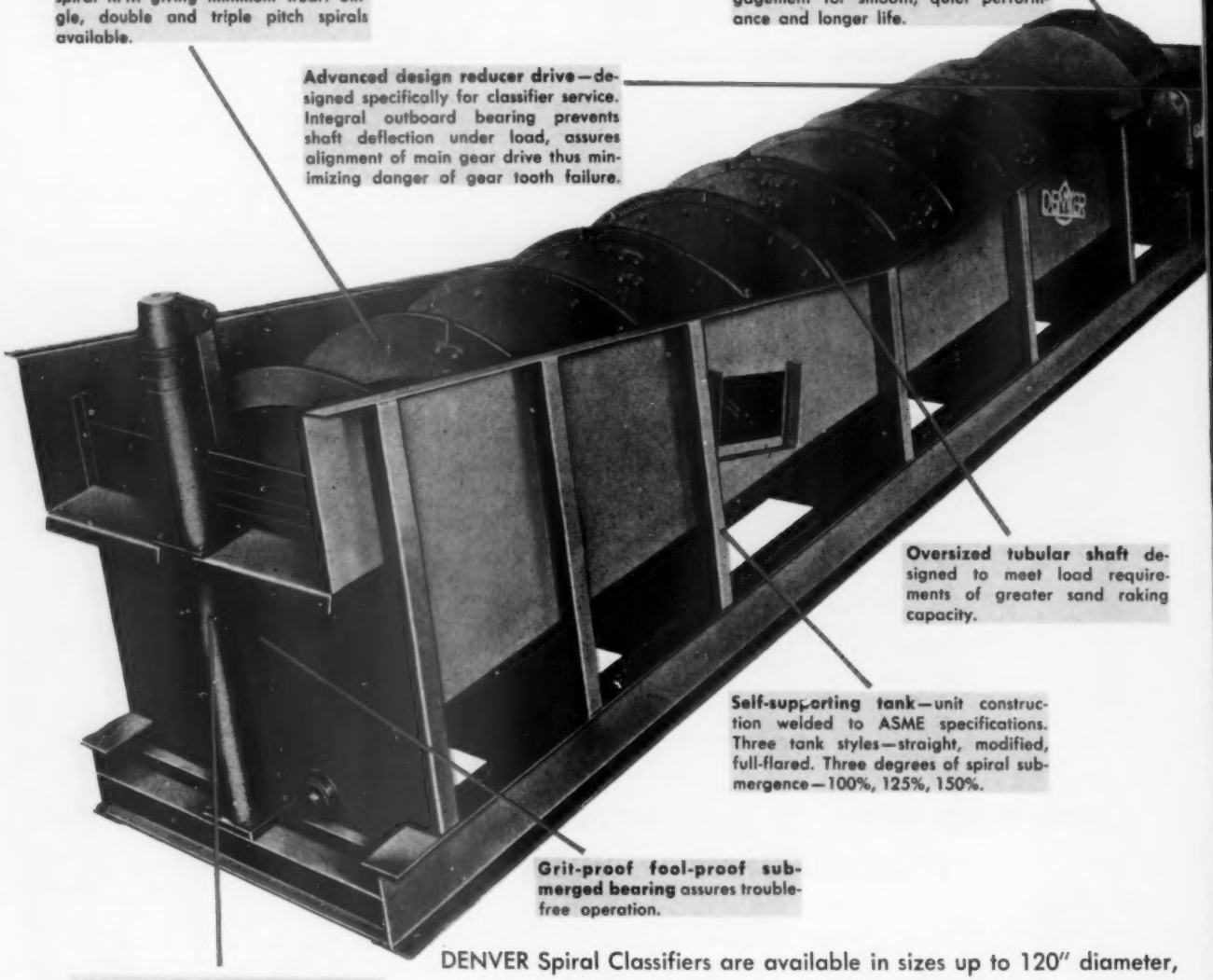
SIZES TO 120"

## Improved Design Offers These Advantages:

**Greater sand raking capacity**—distinctive spiral pitch design provides increased sand raking capacity, reduces spiral RPM giving minimum wear. Single, double and triple pitch spirals available.

**Main gear drive**—bevel gear and pinion are cast from machine cut metal patterns—gives you gears of cut tooth quality which assure proper tooth engagement for smooth, quiet performance and longer life.

**Advanced design reducer drive**—designed specifically for classifier service. Integral outboard bearing prevents shaft deflection under load, assures alignment of main gear drive thus minimizing danger of gear tooth failure.



**Oversized tubular shaft** designed to meet load requirements of greater sand raking capacity.

**Self-supporting tank**—unit construction welded to ASME specifications. Three tank styles—straight, modified, full-flared. Three degrees of spiral submergence—100%, 125%, 150%.

**Grit-proof fool-proof submerged bearing** assures trouble-free operation.

**Lifting device** raises and lowers spiral assembly for starting up under overload conditions and maintenance. Hydraulic, motorized or manual lifting devices available.

DENVER Spiral Classifiers are available in sizes up to 120" diameter, three tank styles, single, double and triple pitch spirals, three degrees of spiral submergence—flexibility to provide a unit built for your job. Write for detailed recommendation on the correct size and type of DENVER Spiral Classifier to do your job economically and profitably.

***Write for Bulletin No. C5C-B7.***

*"The firm that makes its friends happier, healthier and wealthier"*

DENVER

DENVER EQUIPMENT COMPANY 1400 17TH ST. • DENVER 17, COLO. • CABLE DECO DENVER • PHONE CHerry 4-4466

**BRANCH OFFICES:** NEW YORK CITY, 4114 Empire State Bldg., Phone CH 4-6510 • BLUEFIELD, W. VA., P. O. Box 1536, Phone DAvenport 5-6598 • TORONTO, 185 Bay St., Phone EMpire 3-8836 • VANCOUVER, 207 Credit Foncier Bldg., Phone MUtual 3-4826 • LONDON, 15-17 Christopher St., Finsbury Sq., Phone Bishopsgate 0636 • JOHANNESBURG, Broadway and Ninth, Bez Valley, Phone 25-7531 • LIMA, Maquinarias 270, Casilla 4950, Phone 41887 • MEXICO CITY, Avenida Juarez 14, Desp. 615, Phone 21-1477.

ERIEZ *Magnetic Minute*

60 seconds that will help you improve operating efficiency.

# CLOGGED BINS A PROBLEM?

If troublesome slowdowns caused by sticking, arching, stubborn materials are your problem, here's good news:

Eriez Hi-Vi® electro-permanent magnetic Unit (Bin) Vibrators are your answer. They've proven superior time and again for dependable movement of stubborn masses of granular, lumpy or powdered materials in bins or hoppers.

Their concentrated vibration is directed to deliver maximum efficiency precisely where it is needed. The full Hi-Vi line offers models for use with all sizes of bins with wall thickness to ½" — Special models are available for hazardous, dusty locations.

All models bring you these advantages.

- Direct AC operation — no need for rectifiers.
- Lower operating and maintenance costs.
- Compact, light-weight, easy to install.
- Weather-and-dust-resistant housings at no extra cost.
- No sliding or rotating parts.
- No wear, no lubrication.

Get the Hi-Vi unit that's exactly right for your operation. Full technical data is available in our new bulletin. Write for it to:

**ERIEZ MANUFACTURING CO.**
113WA MAGNET DR., ERIE, PA.
ERIEZ OF CANADA LTD.
P.O. BOX 5, STA. W — TORONTO, ONT.

**MAGNA-THOUGHT**
The manufacturer who does the most for his customers is the one who is qualified to provide application know-how as well as superior products.

WM. H. BENSON
Supervisor Vibration Engineering

ERIEZ

A GROWTH COMPANY...
10 NEW PRODUCTS IN THE LAST 5 YEARS

Enter 57-A on card, page 183

M. Narramore

MARVE NARRAMORE, managing director of the Perlite Institute, Inc., has been elected president of the New York Society of Association Executives.

N. Y. S. A. E. represents more than 400 trade association executives in Metropolitan New York.

FAYETTE I. BRISTOL has been appointed to the governing board of the Oregon Department of Geology and Mineral Industries. He is president and owner of the Bristol Silica Company, Rogue River, Oreg.

LUCIUS E. DIXON, vice-president, West Coast operations, The Arundel Corporation, Baltimore, Md., has been elected a director of this firm. He fills the vacancy caused by the death of William C. Knapp.

LAURENCE F. LAWLER, vice-president of American Cement Corporation and vice-president, commercial, Peerless Cement Company, retired recently after having served the industry for 33 years.

Two nonmetallic minerals industry men have been elected to offices in various units of the Controllers Institute of America:

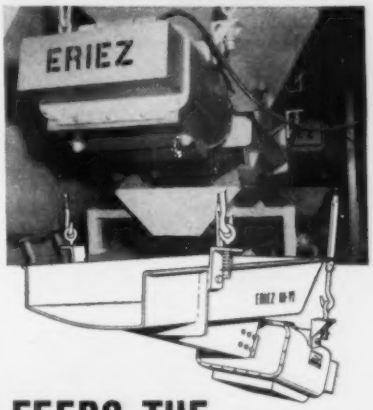
HENRY R. BALTZERSEN, controller, Michigan Limestone Div. (U.S. Steel), was elected a director of the Detroit Control.

A. C. HAROER, vice-president, finance, and secretary of Ingalls Stone Company, Bedford, Ind., is a new director of the Indianapolis Control.

RALPH R. MEASE has been named regional sales manager of the new territory opened by the Lime and Limestone Division of Warner Company. Offices will be in Newark, N.J.; the area includes New England, metropolitan New York City, and northern New Jersey.

ERIEZ *Magnetic Minute*

60 seconds that will help you improve operating efficiency.




# FEEDS THE BIG STUFF WITH ACCURATE CONTROL

PATENTED

AC powered Eriez Hi-Vi Vibratory Feeders move large tonnages of bulk materials with accurate control . . . more efficiently and economically. Illustration shows one of a number of Eriez units available for heavy feeding applications where **big capacity and accuracy** are essential.

Whatever your application, there is an Eriez electro-permanent magnetic feeder that will meet your exact needs. And you get this exclusive combination of advantages: No rectifier needed . . . AC operation. Totally enclosed drive element ideal for hazardous, dusty, wet and corrosive installations. New fibre glass springs assure superior performance and control . . . longer life because spring breakage is practically eliminated.

The full line of Eriez Hi-Vi vibratory feeders includes models with feeding capacities ranging from ounces to many tons per hour.

Write for descriptive bulletin to:

**ERIEZ MANUFACTURING CO.**
113WB MAGNET DR., ERIE, PA.
ERIEZ OF CANADA LTD.
P.O. BOX 5, STA. W — TORONTO, ONT.

**MAGNA-THOUGHT**
Constant research, development and refinement are the keys to new and improved products. New and improved products are the keys to a company's growth.

A. F. ISRAELSON
Chief Engineer

ERIEZ

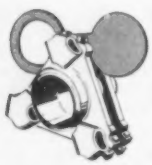
A GROWTH COMPANY...
10 NEW PRODUCTS IN THE LAST 5 YEARS

Enter 57-B on card, page 183

FAST... POSITIVE... EASY... VISIBLE*

line blinding with Hamer 3-Bolt Line Blind Valves

Spool shaped nuts and bolts spread flanges when turned to the LEFT with bar.



Spectacle plate is reversed by lifting slightly and revolving in either direction.

Flanges are tightened by turning bolts to RIGHT.

FAST, because in a minute or two the spectacle plate is reversed from open to closed position. POSITIVE, because you have a solid plate seal. EASY, because the flanges are spread by backing-off three bolts with a bar. VISIBLE*, because you can see from a distance which blinds are open and which closed.

With HAMER Line Blind Valves on your silo loading lines, there is no danger of contamination . . . no costly multi-man operation to blind the lines . . . no possibility of the valves wedging, sticking or jamming. There is practically no maintenance required and they are unsurpassed for easy operation, long life and resistance to abrasion.

Ask your HAMER Valve Specialist for information or write direct for latest catalog.

WECO WELL EQUIPMENT MFG. CORP.
P. O. BOX 19465 • HOUSTON 24, TEXAS
Division of CHIKSAN COMPANY
a subsidiary of FMC CORPORATION

WECO UNIONS · CHIKSAN SWIVEL JOINTS · HAMER LINE BLIND VALVES · HAMER PLUG VALVES · WECO AIR-O-UNION · WECO COMPOUNDS · WECO SNATCH BLOCKS

Enter 58 on card, page 183


RUSSELL RICHARDSON has been appointed assistant director of advertising and public relations for Alpha Portland Cement Company. He has worked in that department since April, 1959.

P. A. Krentel

PAUL A. KRENTEL has been appointed vice-president, sales, of the Lime and Limestone Division of Warner Company. He was formerly director of sales and marketing for the Bzura Chemical Company of Keyport, N. J., and sales manager, chemical division, the Catalin Corporation of America.

R. L. Lambert

ROBERT L. LAMBERT has been appointed finance director of American Cement Corporation. He has served as a financial executive with Riverside Cement Company, one of the operating companies of American Cement, most recently as treasurer.

J. F. Simpson

JAY F. SIMPSON has joined Alpha Portland Cement Company as director of sales. He will be responsible for sales of all types of cement for industrial and commercial construction. Prior to joining Alpha, he was director of sales for Barrett Division, Allied Chemical Corporation.

ALLEN L. CHICKERING JR. was recently elected chairman of the board of the American Cement Corporation. GARNER A. BECKETT was elected honorary chairman of the board.

## Profit Producers prefer

# HYDRASTROKE*
## HEAVY-DUTY FEEDERS

Reciprocating Feeders to feed Screens, Crushers, Belts, Trucks, Skips or Railroad Cars.

- **EXCLUSIVE HYDRAULIC OPERATION**
  Designed for low installation, operation and maintenance costs.
- **DESIGNED FOR SEVERE SHOCK LOADING**
  Special rugged construction assures durability.
- **ROCKER MOUNTING OR SUSPENSION**
  Eliminates wear due to friction, needs no lubrication, takes minimum head room.
- **WIDE RANGE OF SIZES**
  Widths 36" to 96" . . . feeding capacities from 200 to 7500 tons per hour.

PATENT APPLIED FOR

NICO Write for Illustrated Brochures

*TRADEMARK REGISTERED

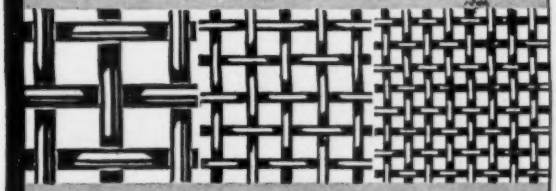
## NATIONAL IRON COMPANY

50th Avenue West and Ramsey Street • Duluth 7, Minnesota

Subsidiary of Pettibone Mulliken Corporation, Chicago 51, Illinois

Enter 59-A on card, page 183

## STRONG AS ARMOR
# NAT-ALOY
## *Woven Wire Screens*



Reliable Nat-Aloy woven wire cloth is specified throughout industry for maximum screening accuracy and economy. Available in flat surface, lock crimp, double crimp, rectangular and long slot openings. All sizes, meshes and gauges—prompt shipment.

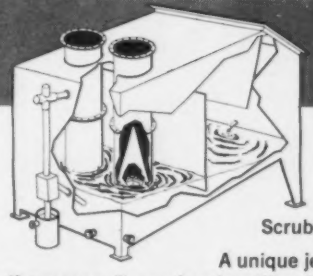
**WE OFFER NOW...SUPER NAT-ALOY**
**OIL TEMPERED WOVEN WIRE CLOTH**
★ GREATER RESISTANCE TO ABRASION
★ MORE TONNAGE AT LOWER COST
★ FEWER COSTLY CHANGE OVERS

Write for information. Also stainless steel wire screens.

NATIONAL WIRE CLOTH COMPANY
252 W. Fairfield Ave., St. Paul 1, Minnesota

Enter 59-B on card, page 183

## Jet-scrubs gasses CLEAN
## . . . with no moving parts
## TURBULAIRE SCRUBBER



When scrubbing will clear your dust and fume problems — a WP Turbulaire Scrubber will do the job best.

A unique jet-action principle is the reason. Even when handling dust particles of sub-micron size, it has an unusually high efficiency. No moving parts; nothing to require frequent maintenance or replacement. Wide application flexibility; easily constructed from various types of corrosion-resistant materials.

**WRITE FOR LITERATURE** today to Western Precipitation, 1000 W. 9th St., Los Angeles 54, Calif. (In Canada, write 8285 Mountain Sights Ave., Montreal, P. Q.)

DUST AND FUME CONTROL SINCE 1907

## WESTERN PRECIPITATION

DIVISION OF JOY MANUFACTURING COMPANY

Enter 59-C on card, page 183

# GARDNER-DENVER GOES ALL

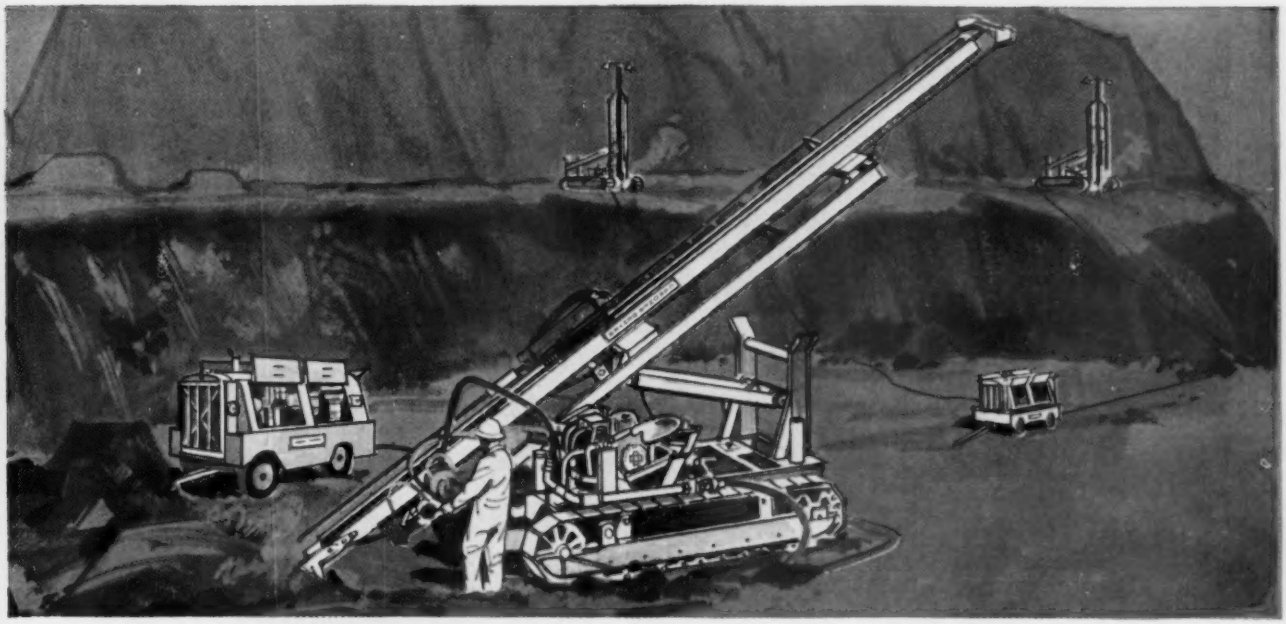
## HARD ROCK?
## TOUGH ROCK?
## RAVELLY GROUND?

When you're figuring close on rock drilling costs, the Gardner-Denver Specialist can help you pull together *the fastest rock drilling task force you ever saw!*

# THE WAY TO HELP YOU EARN MORE PROFITS

- Heavy-Duty HT143 Crawler Drill with 5½" percussion drill for big bore blast hole drilling.
- "Air Trac"® Crawler Drills that outmaneuver anything else on the market.
- Hydraulic Booms and Drill Positioners that spot the hole right where your powder man says it should go.
- Chain Feed Masts that keep a steady pressure on the bit and make every hammer blow count. Hydraulic extension takes longer steel.
- Power Rotation Rock Drills that provide absolute control of rotation without impact . . . impact without rotation . . . impact and rotation . . . for faster penetration.
- Remote Controls permit operator to position drill and to control drilling cycle from most convenient spot. Save time.
- Carburized Sectional Rod and Couplings with the new "HI-LEED"® thread that joins sections firmly for greater impact transmission . . . yet always uncouples quickly. Known for long service.
- Carbide Insert Rock Bits that match the extra life and efficiency of Gardner-Denver steel.
- Pneumatic Bit Grinders that keep your bits sharp right at the rig.
- Air Line Oilers to keep your rock drills and tools properly lubricated for longer life.
- Hand-Held Drills for trimming and secondary blasting. A size and weight for every type of rock.
- And for low-cost air power—the new Gardner-Denver Rota-Screw Portables provide immediate, steady compressed air in any weather or climate. They'll slash your maintenance costs because there are no blades or other moving parts in the compression chamber.

**SEE YOUR GARDNER-DENVER ROCK DRILL SPECIALIST BEFORE YOU BID ON YOUR NEXT JOB**



**PLUS SERVICES ARE BASIC AT GARDNER-DENVER:**

Sizes and models to suit job requirements • Specialists help you choose correct equipment • Demonstrations of equipment in the field • Ready supplies of replacement parts anywhere • Trained technicians to give you mechanical help • Engineered durability and maintenance economy • Pace-setting new products to meet job demands.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

# GARDNER - DENVER

Gardner-Denver Company, Quincy, Ill.—Offices in principal U.S., Canadian and Mexican cities
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario.

International: Gardner-Denver International Division, 233 Broadway, New York 7, N. Y.
Offices: Buenos Aires, Argentina; Artarmon, N.S.W. Australia; Brussels, Belgium; Rio de Janeiro, Brazil; Santiago, Chile; Barranquilla, Colombia; Lima, Peru; Ndola, N. Rhodesia; Salisbury, S. Rhodesia; Johannesburg, Transvaal

# new machinery

● The Red-All, Model 300, is a portable motor steam cleaner designed and engineered by Electronics, Inc., for blasting clay, mud, grease and oils from heavy equipment.

The pressure is adjustable from 60 to 100 p.s.i. of saturated steam. The Red-All delivers steam solution in 70 seconds, and is completely automatic. It uses kerosene or number 1 or 2 fuel oils, and operates all day without refueling.

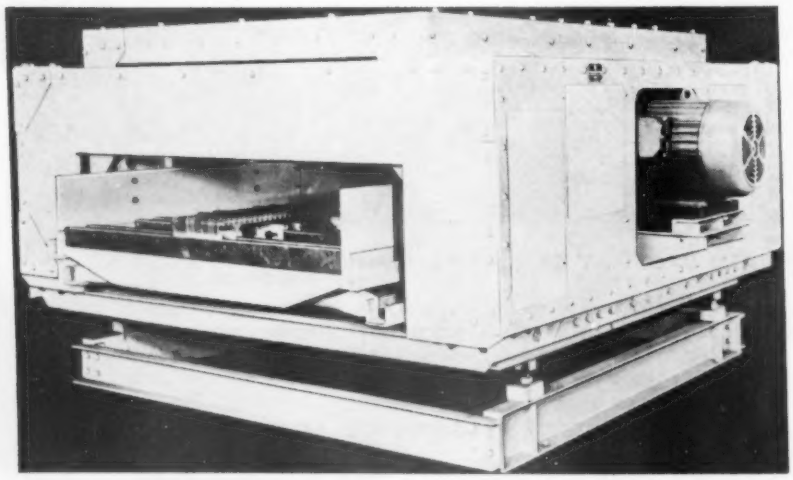
The unit is mounted on a truck axle with a ball trailer hitch, and Leveling stand, wheels, and tires are standard equipment. It can be pulled by car, jeep, or truck at highway speeds. The unit is guaranteed for life. **(350)**

● A liquid neoprene protective coating that has been developed by Adhesive Products Corporation can be applied by brush, spray, or paint roller.

The product, APCO liquid neoprene coating, is said to dry quickly, forming a continuous rubber film on metal, wood, plastic, concrete, and other surfaces and remain permanently flexible.

It is reported to be impervious to fresh and salt water, oils, gasoline, naphtha, acids, alkalies, and other chemicals.

Other features are that it does not peel, blister, or crack, and that it offers prolonged protection against rust, mildew, fungus, sunlight, and humidity. **(351)**

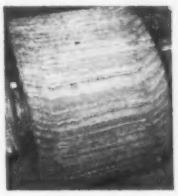


● The Umbra screen, used for wet screening, desliming, and dewatering of granular materials, has been acquired from Victor Halstrick, Germany, by McNally Pittsburg Mfg. Corp.

The feature of the screen is efficient screening without clogging, of solids with high surface moisture. The screen deck is composed of individual panels, which facilitates assembly and replacement. **(352)**

● A hard-facing electrode, Stoody 2134, for use on crushing equipment, earth-engaging tools, and other parts subject to severe abrasion and impact, has been developed by Stoody Company.

Two application patterns that have



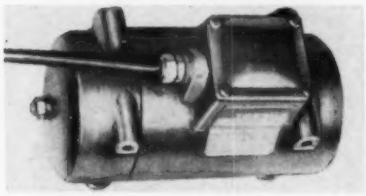
been evolved are shown here. In one the alloy is applied in dots on shovel lips and dipper teeth. The method not only produces an effective wear-resistant hard-facing pattern, but aids application because the skip-dot technique reduces the amount of heat input during the welding process. By spacing the dots relatively closely together abrasive ores are held away from the bucket surfaces, and erosion of the base metal is reduced.

It also allows fine material to pack tightly between the raised dots, protecting both the bucket and the hard-facing.

In the other application a pattern was developed for a machine engaged in reducing 10-in. rock down to minus 2-in. railway ballast in a single pass. Nickel-manganese is used to restore the roll to size, if deeply worn. Then stringer beads of Stoody 2134 are applied to the center section of the face of the roll. After 2134 is applied where the wear is the heaviest the welder completes the job by using the more economical Stoody 21 rod, pointing the beads toward the center by angling the stringers in the direction of rotation. By thus angling the beads it has been found that the flow of rock being crushed is directed toward the center, where the high-alloy deposits bear the brunt of the load. The stringer beads also provide a corrugated face to give greater "nip" to the rolls. **(353)**

# and equipment

**for further information use card on page 183**



● Heavy-duty, electric external vibrators, with considerably shortened shafts between bearings to reduce bearing strain and minimize bend in the shaft at high speeds, are manufactured by Tremix Company, Inc.

Available in three compact sizes —one slightly larger than a football—with impacts ranging from 500 lb. to 1,400 lb., the vibrators are designed to fit bins, chutes, screens, etc., and come equipped with holders for attachment to hopper bottom railroad freight cars.

The vibrators are reported to be suitable for use as heavy-duty car shakers for unloading cement, gypsum, sand, and similar bulk materials. The high centrifugal force motion build-up of the vibrators delivers a power-weight ratio of 20 to 1 or larger. As an example, according to the manufacturer, the Model TR-30 has an impact of 800 lb., yet weighs only 40 lb.

The noiseless, totally enclosed units have eccentrics adjustable to any particular need. **(354)**

Check
**TECHNICAL LITERATURE**
offered on page 183.

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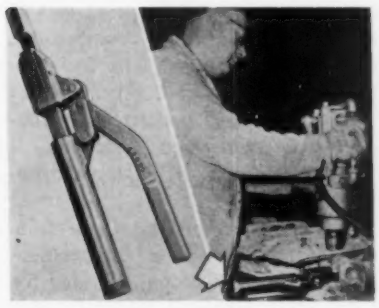
● A device that provides greater flexibility in the operation and maintenance of wire cloth and plate decks on vibrating screens has been developed by Allis-Chalmers Manufacturing Company.

Using the new device makes it possible to change screen decks in a fraction of the time formerly required, and permits tensioning of the cloth while the screen is in operation.

A 1¼-in. adjustment on each side of the deck (2½ in. over-all) is provided by the fastener. One size fits all sizes and types of vibrating screens, which simplifies the stocking of parts.

The device is available on all new Allis-Chalmers vibrating screens, as well as a replacement for those already in operation. **(355)**



● A nut gripper, designed especially for crawler track work, is now available from Rodgers Hydraulic, Inc.

The self-locking grip holds the nut with 7,000 lb. clamping force, allowing removal of stubborn track bolts by one man. The adjustable jaws accommodate nut sizes from ½ in. to 2 in. across the face. The contour of the tool gives easy access to crawler pad nuts.

Other features include use of heat-treated tool steel, reversible inner and outer jaws, hardened dowel pins at pivot points, and extra outer jaw for use on smaller tracks. **(356)**

● A crane boom stabilizer manufactured by Yaun Manufacturing Company prevents free fall of the boom.

If the boom line snaps the boom slowly lowers to the ground. The unit offers automatically controlled boom lowering, independent of ratchets, gears or clutches; regulates at the on-start speed preferred; and is easily overridden by easy brake application. The device is reported to be easily installed between the pendant bridle and gantry blocks on any size or make of crane. The boom has floating action independent of line, and the action of the boom is stabilized against jump and jerk.

A fail-safe action that holds the boom stationary in the air in the event of line failure, and then allows the boom to be valved down under positive manual-hydraulic control is also available. **(357)**

# This Small Detail Can Increase Screen Life 10%

**Careful attention to small details on our part results in worthwhile savings for you. For example: for maximum wear in double crimp wire, we weave and edge most cloth sections so that deeply crimped fill wires parallel the material flow. The reason: in weaving most double crimp cloth, transverse filler wires are crimped considerably deeper than longitudinal warp wires. For maximum resistance to fatigue and abrasion, it is important to bend hooked edges on the shallow crimped wrap wires. This is standard practice in HOYT Wire Screens and can result in as much as 10% longer service.**

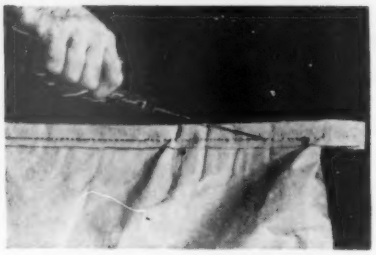
Let us help you overcome production problems at your screening stations. No matter what the difficulty may be . . . poor wear, blinding, corrosion . . . our salesmen are trained to spot and correct the trouble. They are backed by many years of engineering experience and can refer to actual case histories to aid you. Call or write us today. Free handbook upon request.

CONFIDENCE THRU INTEGRITY, QUALITY AND SERVICE • BUILDING

HOYT

**HOYT WIRE CLOTH CO.**
**P.O. Box 1577 • EXpress 4-6871**
**LANCASTER, PENNSYLVANIA**

*Enter 64 on card, page 183*

● A quick-opening closure, the "Bemi-Strip," for sewn open-mouth and sewn valve multiwall paper shipping bags has been developed by Bemis Bro. Bag Company and is now available throughout the United States except in certain eastern portions of the country and the West Coast.

The Bemi-Strip closure is identified by a red tab at the seam of the bag. In use it has been proved completely effective in withstanding ordinary stretch and breakage and sifting of product at the seam. It offers protection at the bag seam equal to present methods of closing sewn bags.

The tab is reported to be as simple to open as the band on a package of cigarettes. There is no contamination of product from loose threads, and the clean opening permits re-use of the bag. The tab, 3 in. in length and ⅜ in. in width, is placed on the factory-closed end of the bag, usually at the top. The tab serves as a point of contact for the thumb and first finger to initiate the opening of the package. A gentle pull snaps the tab loose from the bag seam. A swing of the arm frees the sewing thread and pops the bag open. The bag can be opened partially, to form a filling spout, or completely, as desired. **(358)**

● A new and larger tractor-excavator, the Eimco 631 Excavator, has been added to the line of air- or electric(a.c.)-powered underground loaders.

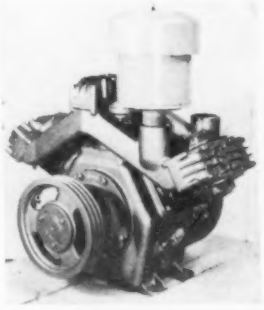
The crawler-mounted loader is a larger version of the Eimco 630 Excavator, affording higher discharge and the capacity to load a longer and larger truck.

The standard discharge height is 8 ft. in headroom of 11 ft. 2 in., with other discharge heights available. Discharge distance behind the rear of the machine is 19 in.; SAE bucket capacity 12½ cu. ft.; minimum over-all height 6 ft. 5 in., and operating width 5 ft. 8⅝ in.

The new 631 has greater power, with the air-operated unit, for example, featuring a 22-hp. motor. According to Eimco the unit is able to handle substantially greater tonnage and discharge.

The all-steel machine weighs 13,000 lb. and retains such Eimco

features as independent power to each track, ease of control, excellent stability, and a wide range of cast-steel track shoes. **(359)**

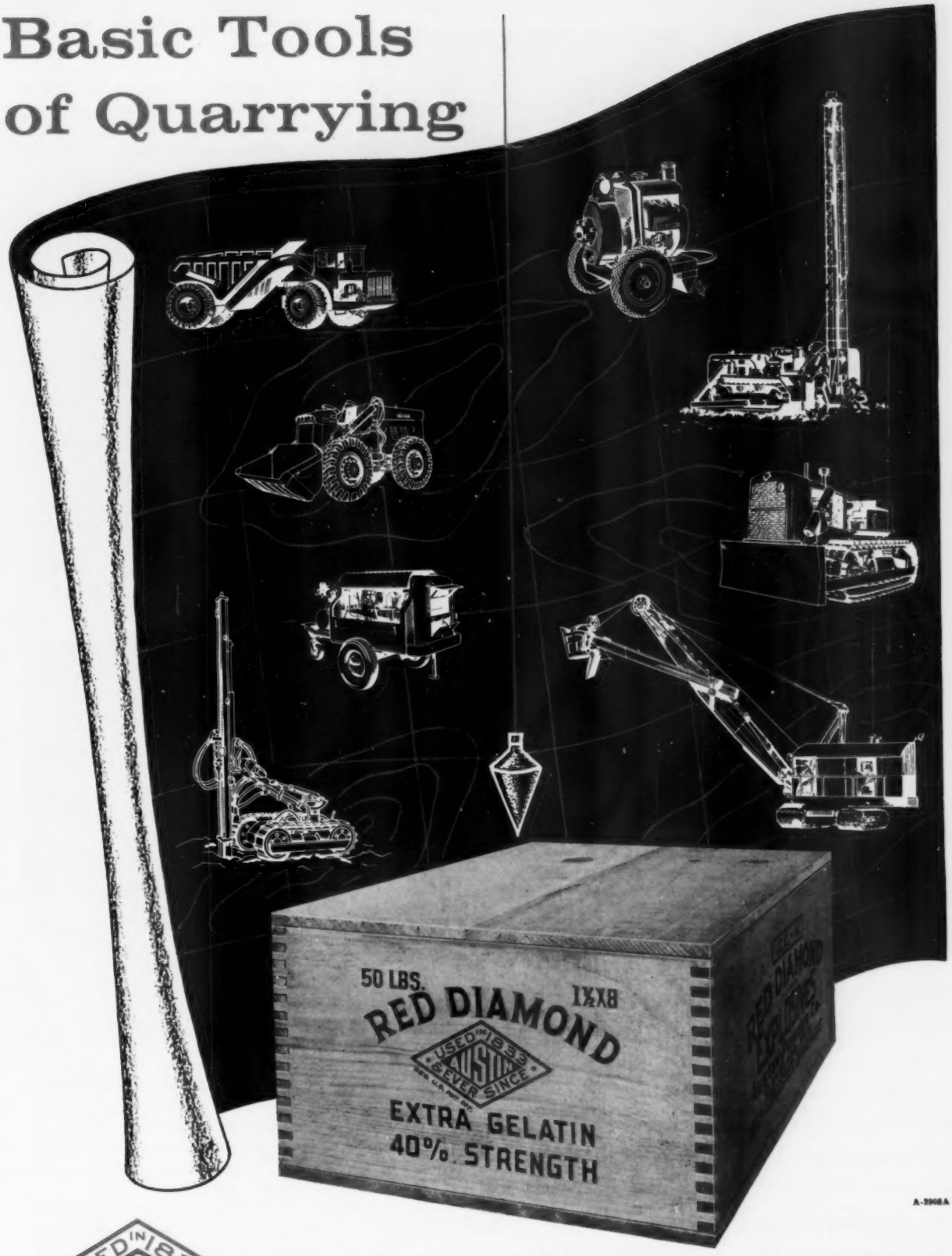


● A single-stage air compressor, Model 20XC-1, suitable for economical transfer of dry cement, fly ash, and other pelletized, granulated, or pulverized materials, is available from Worthington Corporation.

At 1,750 r.p.m. the three 6-in. cylinders have a piston displacement of 236.2 c.f.m. The unit is rated for continuous service at 30 p.s.i. using 29 brake horsepower, and intermittent service at 40 p.s.i.

The short stroke produces low piston speeds, giving long life and less cylinder wear. The design results in low valve velocities and lower operating temperatures. Practically oil-free air is delivered. **(360)**

# Basic Tools of Quarrying



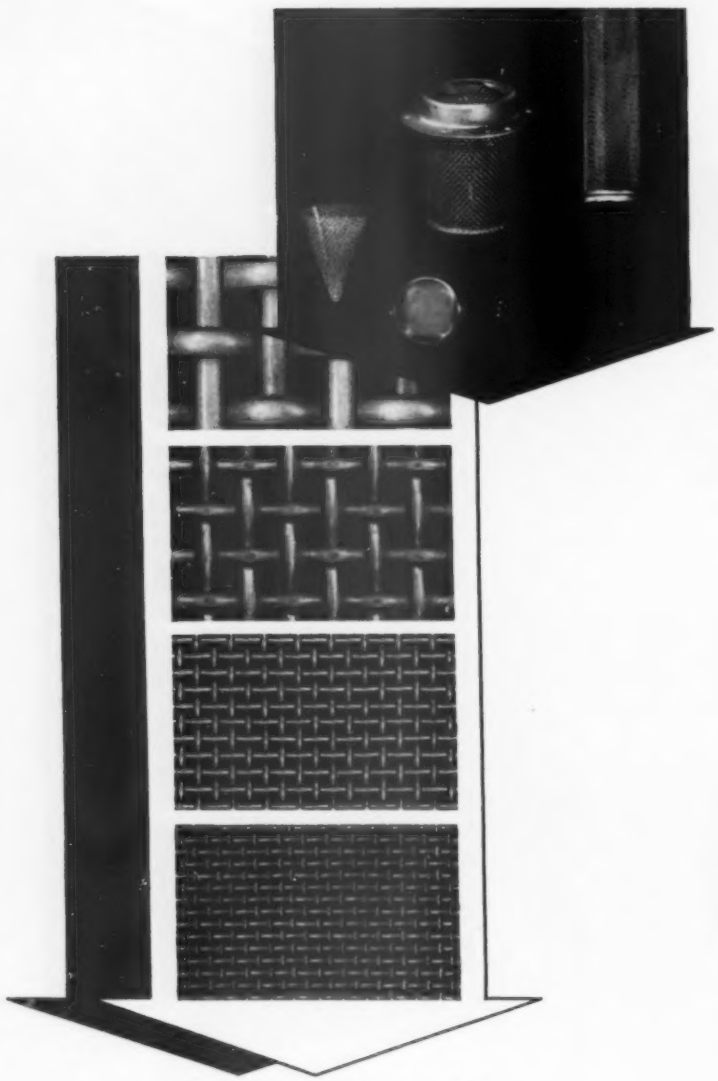

A-3968A

USED IN 1833 AUSTIN & EVER SINCE

**AUSTIN POWDER COMPANY**

Cleveland 13, Ohio

explosives ◆ ammonium nitrates ◆ primers ◆ blasting supplies
detonating fuse and connectors ◆ AP drill heads



CLEVELAND

MANUFACTURES WIRE CLOTH TO YOUR SPECIFICATIONS

Whatever your screening requirement—filtering, straining, sizing, dewatering, grinding or scalping, Cleveland manufactures a full range of wire cloth from any metal or alloy to your exacting specifications. Experienced workmanship and rigid quality control practices assure accuracy in mesh count and mesh size. Modern weaving and fabricating machines guarantee delivery. Thousands of stock items are available in standard sizes for immediate shipment. Write for Bulletin 160 containing complete information and wire cloth specifications.

THE CLEVELAND WIRE CLOTH and MANUFACTURING COMPANY
3574 East 78th Street • Cleveland 5, Ohio • DI 1-1832

Enter 66 on card, page 183

● Special problems of heat and abrasion encountered in the handling of such dry bulk materials as cement by pneumatic methods have led to the development of three new specialty hose constructions by The Goodyear Tire & Rubber Co., Akron, Ohio.

Materials selected to combat temperatures to 350 deg. F. are combined in a 3-in. hose manufactured for air-inlet service on pressurized transport vehicles. As the hose is flexible it can be used for installations where sharp bends are required.

Abrasion has been controlled in two specifications for discharge use with tube compounds of resistant stock.

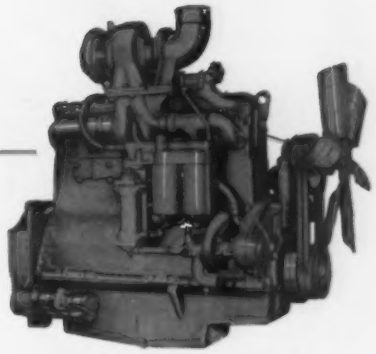
Dry-Bulk-S is a lightweight hose for truck service. Dry-Bulk-W has a wire spiral in its carcass to maintain inside diameter. Both types are produced in 4-in. size for use by bulk haulers of powdered and granulated solids, and at receiving plants. **(361)**

● The "Chase Poly Insert Sleeve," a new valve bag design, is now commercially available from the Chase Bag Company in a complete line of sewn- and pasted-end multiwall shipping sacks.

The feature is a polyethylene-film sleeve, firmly fitted into the valve notch and extending inside the bag. The valve notch with tape sewn in place is shown at lower right in the illustration. The flexibility and self-cling characteristics of polyethylene

(*Continued on page* 72)

## THE AC 21000 DIESEL



The Allis-Chalmers 350-hp, turbocharged 21000 diesel is gaining acceptance at an ever-increasing rate. For each new installation adds still more evidence of its remarkable efficiency — efficiency that passes along an 8- to 27-percent saving in fuel wherever it's used.

## MOVES IN...

The new, controlled-turbulence, open-chamber design packs maximum horsepower into a compact package . . . greatly simplifies installation. Allis-Chalmers engineers work closely with the equipment manufacturer on adaptation and proper application of the engine.

## GIVES SMOOTH, CONTROLLED POWER IN THE LIMA TYPE 1250

Here in this 4½-yd Type 1250 Lima dragline, the 21000 engine adds still further to its reputation. Fuel savings have been as expected. And as for ability to get the job done, its responsiveness and acceleration have been outstanding.

Performance like this has led many manufacturers to standardize on the 21000 and other "Thousand Series" diesels. Get full information from your dealer or direct from Allis-Chalmers, Milwaukee 1, Wisconsin. BC-37

The 21000 also is offered in the Lima Type 803.

**ALLIS-CHALMERS**

TEAMWORK FOR PROGRESS

**If you have a weight problem...**

Our business is solving other people's weight problems. Usually, these problems involve wanting to know exactly how much weight passes over a conveyor in a given time period. Often, the problem is to control the flow of material into a continuous mixing process. And frequently, somebody asks us to help him automate a complete process system, with interlocks, time delay relays, and complete circuitry control systems.

All the problems we solve have two things in common: measurement or control of the amount of material *by weight*, which is a far more accurate way of doing it than by volume; and secondly, the fact that the material is *in transit* during the weighing and controlling.

**... there are a number of solutions.**

In our existing line of Weightometers® and Feedoweights,® we now have so many different types of standard equipment . . . at last count, it was approaching 200 . . . that there is virtually no existing set of requirements that at least one of them can't answer. We can give you electrical, electronic, hydraulic or mechanical systems. And in the very rare cases where one of our standard models can't be used, we'll engineer one for you.

Moreover, if you already have a conveyor weighing or feeding system in operation, we can automate it for you, no matter whether your arrangement is mechanical, electro-mechanical, hydraulic or electronic. We can do this for you with the new Merrick Rate Transducer.

This is an ingenious device, if we do say so, that can be fitted to any Merrick Weightometer, no matter what its vintage. It produces a straight-line voltage output control signal. You can use this to control or provide information in a whole host of different applications. With it, you can relate other process steps to your conveyor feed. Or you can couple your Weightometer to a continuous recorder, or make it feed information into a computer.

As we say, you can order it on your new Weightometers, or we'll be glad to install it on your existing units.

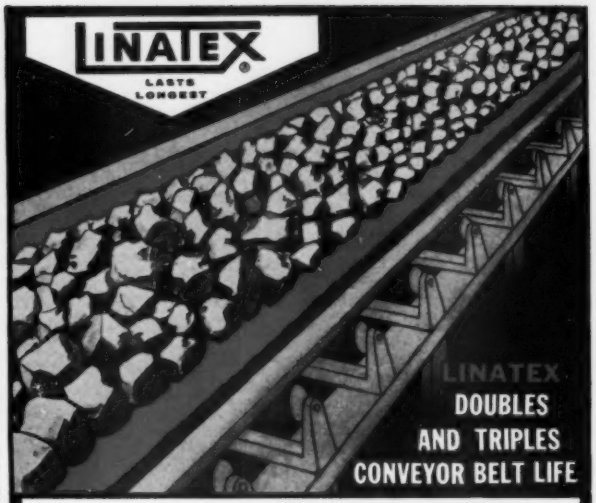
So after fifty-three years in the business, the Merrick line is still the most modern, most adaptable that you can find anywhere. Why not drop us a card? We'll be glad to send you our latest literature.

**Merrick**

*more than fifty years of "firsts" in automatic weighing*

MERRICK SCALE MANUFACTURING COMPANY
180 Autumn Street • Passaic, N. J.

Enter 68-A on card, page 183



LINE WITH LINATEX

LINATEX HAS UNEQUALED ABRASION RESISTANCE FOR:

Transfer Chutes ____ Feeders
Skirt Boarding ____ Belt Wipers
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COLD BONDING PROCESS — JOB SITE APPLICATION

**LINATEX CORP. OF AMERICA**
P.O. DRAWER "D". STAFFORD SPRINGS, CONN.

Enter 68-B on card, page 183

**TROJAN PENTOLITE PRIMERS**

**DETONATION RATE 25,000 fps**

- Dependable—Safe—Lowest cost
- Impervious to water
- Contains no nitroglycerin to produce "dynamite" headaches
- Thousands used since 1949
- For detonating insensitive blasting agents

*New bulletin #103 upon request*

**TROJAN POWDER COMPANY**
*Originators of first successful non-headache dynamite*
Seventeen North 7th St., Allentown, Penna.
Plants: Allentown, Pa., Wolf Lake, Ill., San Leandro, Calif.
Sales offices and distributing magazines in principal consumer districts

TROJAN Explosives

Enter 68-C on card, page 183

# BIG APPETITE FOR ROCK PRODUCTS

For screening ease and speed, nothing matches the efficiency of Hendrick Perforated Metal screens. Large, precision perforations provide extra capacity for extra profits, eliminate blinding and assure accurate sizing. These heavy-duty high-carbon or heat treated steel screens are designed for continuous, wear-resistant service. They are available in flat or corrugated plate and in a wide range of round, square and hexagonal openings to suit your specific requirements. Furnished with standard hook flanges for easy attachment to any vibrator. Call your local Hendrick representative (he's listed in your Classified Telephone Directory under Metals, Perforated)—or use the coupon below for further information.

**HENDRICK** Manufacturing Co.
Carbondale, Penna.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens
Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Open Steel
Flooring • Shur-Site Treads • Armorgrids • Hendrick Hydro Dehazers

**HENDRICK** Manufacturing Company
Carbondale, Penna.

Gentlemen: I want more information on Hendrick Perforated Metal screens.

- ☐ Please have representative call.
- ☐ Please send FREE literature on Perforated Metal Screens.

Name_____

Title_____

Company_____

Street_____

City_____ State_____

# The popular Cedarapids Model 443 SENIOR COMMANDER

When the first Cedarapids Commander crushing and screening plant was designed, it was an immediate success for high-production, low-maintenance performance. Thousands upon thousands of tons later, the proven basic Commander design is still the most productive and profitable on the market. This is the design which has become the pattern for all portable front delivery tandem crusher plants in the new Cedarapids Commander Series line.

# There's a profit-proved plant for your job in the

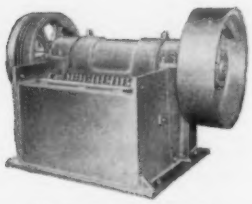
# NEW CEDARAPIDS COMMANDER SERIES OF PORTABLE AGGREGATE PLANTS

● Now it's easier than ever to select the portable aggregate plant YOU need. Cedarapids has combined its broad line of front delivery tandem crusher plants into one *Commander Series* of 18 versatile models (some with semi-electric drives), from the Model 111 Pitmaster Commander to the Model 667 Master Commander. Capacities range from 50 tons per hour to 700 tons per hour.

Each of the 18 models is tailored to your particular needs through engineered variations in component sizes and types which can be combined as you wish to meet specifications in your local conditions. And best of all . . . in the Commander Series you'll find the plant that matches your equipment budget. Your Cedarapids Dealer has the details . . . see him today.

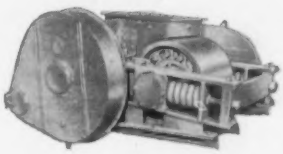
## Continual improvements in proven basic Commander design and components give you these profit benefits

- 100% portability for quick moves. Horizontal screen always in operating position; nothing to raise, lower or adjust for traveling. Permanently mounted conveyors with self-cleaning pulleys speed set-up time. Optional third axle for large models to meet highway load limitations.
- High delivery discharge; no need to doze out driveway for big trucks.
- Easily accessible controls, centralized to give operator complete control and full visibility of all operations.
- Conveyors of the correct size and speed to handle high capacities without bottlenecks. Reinforced plant conveyor, self-cleaning pulleys, Iowa-built troughing rolls and idlers cut maintenance costs.
- Large, mono-rail return wheel easily handles high capacities. Adjustable paddles for handling different types of aggregate.



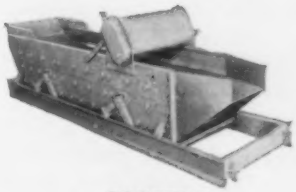
**JAW CRUSHERS**

Choose the size primary crusher you need, either Twin Jaw or Single Jaw types. Both have profit-boosting engineering improvements: Easy, simple hydraulic adjustment of discharge opening on large crusher sizes; heavy-duty pitman and side bearings set close together to prevent strain; extra-heavy eccentric shaft; extra-heavy flywheels; reinforced electric-welded bases, fully stress-relieved.



**ROLL CRUSHERS**

Designed to match high capacities of large screens and conveyors: Heavier than average bearings; exclusive feed design to utilize full width of rolls for crushing; higher speed operation (peripheral speed of roll, 500 fpm); patented shim adjustment quickly increases or decreases opening between rolls. Choose the roll crusher size you need to balance the output of the primary jaw crusher.



**SCREENS**

Cedarapids horizontal vibrating screens are engineered for extremely high capacity per square foot of screening area. You get up to 30% greater capacity than with an inclined screen of the same length. Check these bonus benefits: Snappy, lively action assures fast separation, prevents choking of crushers with screen carryover; fully stress-relieved screen boxes and frames; clamps hold screen wire tight, reduce screen cloth breakage.

Cedarapids

P1261N

Built by IOWA

**IOWA MANUFACTURING COMPANY**

**Cedar Rapids, Iowa**

*Bringing great relief to highway traffic between Norfolk and Portsmouth, a second vehicular tunnel under Virginia's Elizabeth River is scheduled for completion in fall, 1962. Diamond Construction Co. of Savannah, Ga., is the builder.*

# WILLIAMS BUCKETS DIG BIG ... for transportation

15 Reliable Williams Buckets are digging big on this important job, performing general tunnel construction work — constantly dredging, excavating, placing rip-rap, unloading aggregates, etc. B. F. Diamond, prime contractor, tells us he can always depend on Williams to deliver buckets of the rugged quality he wants.

And quality is the outstanding characteristic of Williams clamshell and dragline buckets. Made of the best steels, welded throughout, they're unexcelled for reliability and top performance.

*Our new catalog gives full details on Williams Buckets for every application.*

**WILLIAMS BUCKET DIVISION**
**THE WELLMAN ENGINEERING CO.**
**113 ST. CLAIR AVE., N. E., CLEVELAND 14, OHIO, U. S. A.**

P-2

NAME_____

COMPANY_____

ADDRESS_____

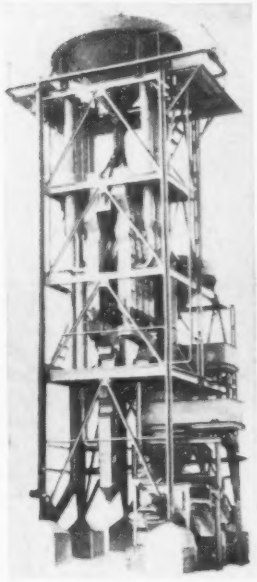
**Enter 72 on card, page 183**


permit a tighter, self-sealing closure. The result is improved bag performance during automatic packing operations, shipping, and storage. Other advantages include reduction in siftage of fine materials and in contamination from outside. Bags remain cleaner and packing areas are kept relatively dust free.

Other features include easy placement of the bag on the filling tube; elimination of need for a tuck-in sleeve; and, for the first time, full moisture protection in the sleeve area. **(362)**

● A compact classification plant that operates automatically, without operators and without power (except for pumps) has been announced by COMCO Corporation.

The plant classifies fine materials



in the 30 micron to 6 mm. range to meet the market specifications such materials as concrete; plaster, foundry and glass sands; abrasives; clay; and kaolin.

According to the manufacturer the plants maintain the same accuracy regardless of variations in the quantity or grading of the raw material, and regardless of changes in the separation, size, and number of separations.

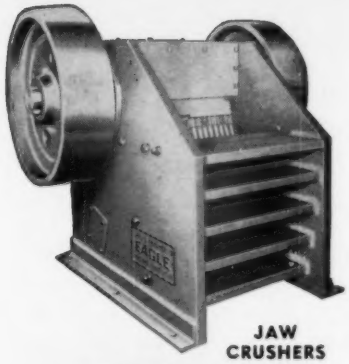
The classification plants are custom assembled from one or more of four standard components, each of which performs a different part

(*Continued on page* 75)

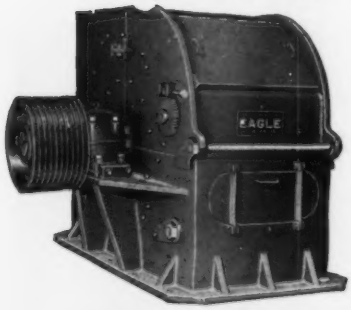
# PRODUCE MORE STONE AND GRAVEL WITH MOBILE

# Eagle Crushers

Eagle's new 6600 series portable jaw crusher—featuring low loading hopper —within easy reach of all makes of front end loaders. Variations in basic portable design provide for cage mills, hammermills and roll crushers.



JAW CRUSHERS




HAMMER-MILLS

CAGE MILLS

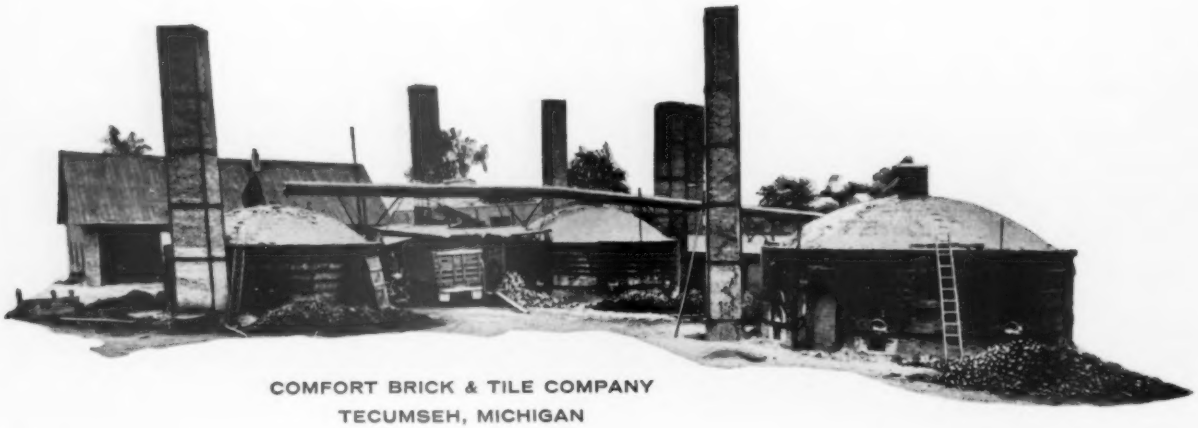
Eagle Crushers bear the characteristic marks of the experienced manufacturer—simple design, durable construction, ease of servicing. Eagle originated the one-piece, electrically welded frame—has pioneered in the field of portable, compact, crusher plants like the one above.

The range of models and sizes in the Eagle line meet most every need from primary crushing to super-fines. Expert engineering counsel available to help you with technical problems. Write—describing your needs. Representative will call if you desire.

EAGLE
JAW AND ROLL CRUSHERS, PORTABLE PLANTS, CAGE AND HAMMERMILLS, CONVEYORS, LOADERS
CRUSHER CO., Inc. GALION OHIO·U·S·A

TRUCK-MOUNTED LOADER

# Service... from a



COMFORT BRICK & TILE COMPANY
TECUMSEH, MICHIGAN

# 24 year old diesel!

A 24 year old Diesel is still serving the Comfort Company. And Company President Ralph Comfort has no intention of replacing it. "I put that diesel to work back in 1936 and it's still going strong today." He adds, "We sure owe a lot to Cities Service for the performance we're getting from our equipment!"

Comfort has relied on Cities Service for more than 38 years! The company produces 4,000,000 feet of clay drainage pipe annually, and it takes plenty of diesel power to keep the factory machinery going. Cities Service C-500 Motor Oil is used in all the diesel engines, Cisco Compound for lubricating open gears, Pacemaker Oil for hydraulic systems and Trojan H Grease as a general lubricant.

Cities Service C-500 Oils are designed for diesels using high sulfur fuels. These oils prevent the sludge, clogging and waste of cold engine operation . . . provide superior hot engine protection, too. You can depend on Cities Service to keep your diesel running better, longer! For information, call your nearest Cities Service office, or write: Cities Service Oil Company, 60 Wall Street, New York 5, N. Y.

RALPH COMFORT AND SON

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

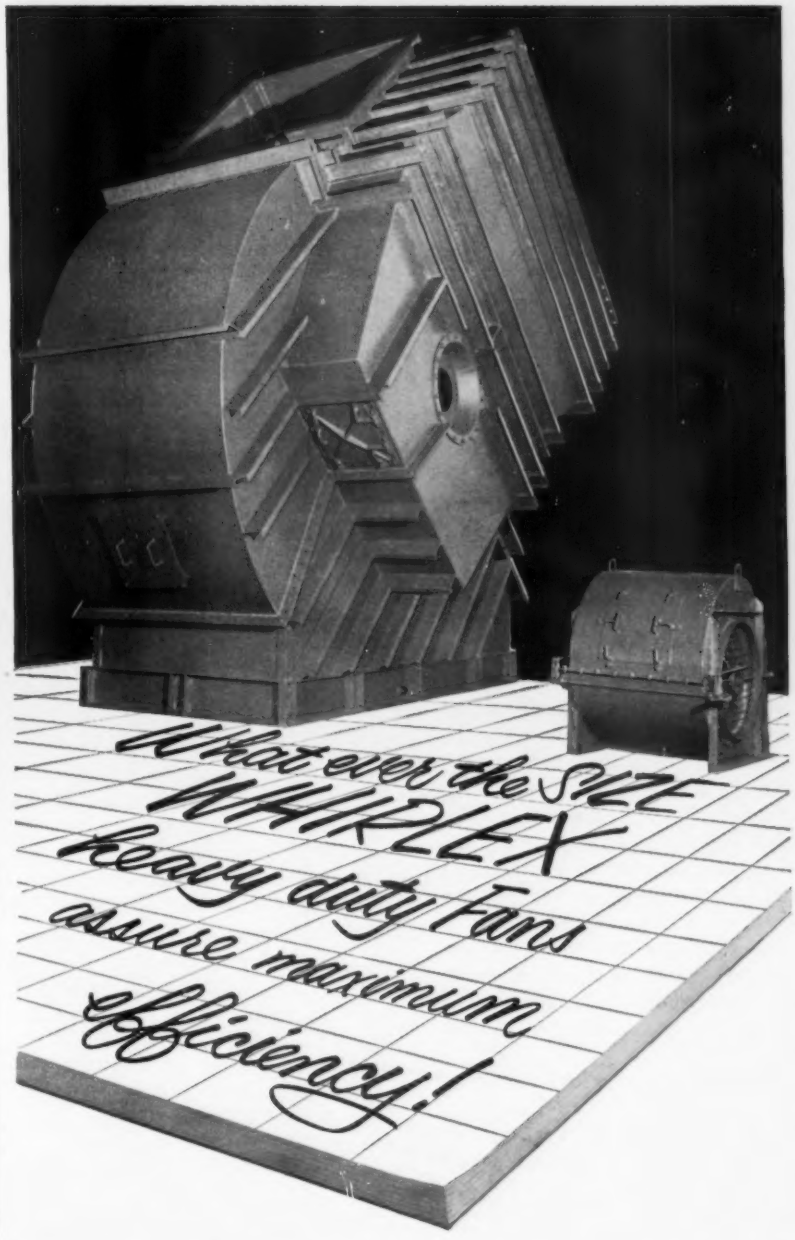
of the over-all classification job: (1) horizontal thickeners which concentrate the raw slurry and remove some of the undesired materials, (2) crest wave classifiers which separate the concentrated slurry into sharply defined fractions, achieving a multi-stage effect in a single pass, with low water consumption, (3) bicone thickeners which perform efficient classification at very low cutting points, (4) horizontal elutriators which separate and discard dust, clay, and other deleterious materials. **(363)**

● An easy opening device to provide full-top or pour-spout opening of sewn open mouth and sewn valve multiwall bags has been introduced by the Bag Division of St. Regis Paper Company.

The device, the "Grip-N-Rip," is designed for both industrial and consumer use. A triple-strength filter tape, used in place of standard filter cord, is sewn over the regular bag top tape, providing a pulling tape for easy opening.

For full bag top opening the filter tape is simply pulled away from the top of the bag. The regular bag top tape, held in place by the same thread, is then free, and the bag is completely open.

For pour spout opening the regular bag top tape is pasted along the top of the bag except for a few inches at one end to allow for limited opening. After the filter tape has been pulled away (as it is for full opening) the unglued section of the regular tape is folded back and the pour spout is formed. If all the material is not used at one time the tape can be folded back over the spout, and clipped in place, thereby making it easy to store and re-use the bag. **(364)**


WHIRLEX fans and dust collection equipment offer the maximum in efficiency regardless of the size or operating conditions. A wide variety of designs, metals and linings are available to you from WHIRLEX!

FLY ASH ARRESTOR
CORPORATION
205 North 1st Street / Birmingham, Alabama
1355 Market Street, San Francisco 3, Calif.
420 Lexington Avenue, New York 17, N.Y.

Bag Collectors ■ Mechanical Collectors ■ Wet Collectors
Induced Draft Fans ■ Forced Draft Fans ■ Exhaust Fans
Self Supporting Stacks ■ Duct Work

Enter 75 on card, page 183

## Washington News Letter

(*Concluded from page 11*)

tions on which they build may turn out to be in error. The assumption which is currently most in jeopardy is that of continued peace. If the United States were to become involved in a war, even a limited war, all of the calculations would go awry.

With respect to taxes, the Administration has accepted the following approach. It is not so much convinced that the economic analysis is correct, but that as a political matter it would be an error even to suggest tax increases at present. Whatever chance the President has for getting most of his program through Congress would be endangered by the unpopular thought that all of these things might have to be paid for by higher taxes.

However, the conservatives are clearly not convinced. Although they hope that Professor Heller turns out to be right, they really are getting ready for a large deficit, with its accompanying inflationary effects. As usual, the Federal Reserve Board will be expected to use its powers to control interest rates and the quantity of money in circulation in an effort to avoid the worst of those effects. It will be no surprise to them if the President should finally be forced to make the hard decision to recommend a tax increase.

However, whether this and many other unpleasant steps will have to be taken will depend for the most part on the outcome of the inevitable meeting with the Russians over the Berlin question.

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## Labor Developments

(*Concluded from page 13*)

tion about the employment policies or practices of proposed subcontractors may be required.

As a part of a bid or negotiation of a contract, any bidder, proposed contractor, or proposed subcontractor may also be required to file similar information with respect to any labor union or workers' representative with whom he deals or has reason to believe he will deal in connection with the performance of the proposed contract. The labor union or workers' representative may be asked to consent and agree that recruitment, employment, and terms and conditions of employment under the contract will be in accordance with the purposes of the program. If the union refuses, the employer also is required to certify to that fact and to report on his efforts to obtain such agreement.

Complaints of violation by employees or applicants for employment with government contractors and subcontractors may be submitted either to the contracting agency or to the President's committee. In either case, they will be investigated by the contracting agency or by the committee. If no violation is found, the matter will be dismissed, but only after a review by the committee's executive vice-chairman.

If the investigation indicates an apparent violation, an effort will be made to resolve the matter by informal means, generally by consultation with the employer. If this effort fails, sanctions will not be imposed until after the accused contractor has been given an opportunity to present his case in a formal hearing. If the matter is to be referred to the Department of Justice to obtain compliance, this will not be done until the employer has been given an opportunity to comply.

In an effort to avoid an unnecessarily heavy burden of filing reports by employers who, as a matter of course, comply in any event, the regulations provide a procedure whereby the committee may issue Certificates of Merit to government contractors when it is satisfied that their personnel and employment practices and their practices on personnel training, apprenticeship membership, grievance and representation, upgrading, and other related points conform to the purposes and provisions of the program. If an employer holds a Certificate of Merit, he will be exempt from the requirement of filing compliance reports. These certificates may be suspended or revoked by the committee at any time.

As long ago as 1931, with the passage of the Davis-Bacon Act, and again in 1936, with the passage of the Walsh-Healey Public Contracts Act, the Federal Government used the power of its large purchases to require government contractors to live up to certain socially desired ends. In those cases, the only matters covered were wages. In recent years efforts have been increased to use the same pressure to achieve other similar ends, but this time in the area of racial equality.

In the meantime, the extent of government purchases has multiplied many times. The regulations described above almost complete this latter phase. The fact that this has been accomplished without legislation, that is, without involving the Congress at all, is significant. A Presidential executive order did the whole job.

---

In a move to make its publications of more value to members living outside the United States, the American Concrete Institute is now including in its monthly *Journal*, Spanish, French, and German translations of the explanatory synopses which accompany the technical papers. The full text of these papers will continue to be published in English only.

---

Louisville Cement Company employees were honored, along with management, when the Clark County (Indiana) Chamber of Commerce recently presented a community service award to the company for a century of service to the community.

---

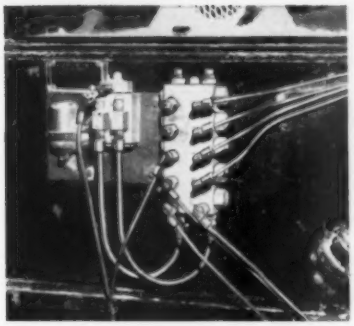
Contracts have been let for the construction of the Johns-Manville Corporation's plant at Coalinga, Calif. Contracts are held jointly by L. D. Folsom, Inc., Coalinga, and Remo Construction Company, Avenal, Calif. The mill is expected to be in operation by January, 1962. Anticipated production will be from 12,500 to 25,000 tons of asbestos fiber annually.

---

In the six months ended June 30, U.S. Gypsum reports sales of $128,208,394 (*vs.* $133,029,163 in 1960) and net income of $16,727,257 (1960 period: $18,648,131). Earned per share: $2.05 compared with $2.29 in the 1960 period.

# This "big baby" bites deep and hard

# ...AND ALEMITE CENTRALIZED LUBRICATION KEEPS IT WORKING SMOOTH AND SURE!



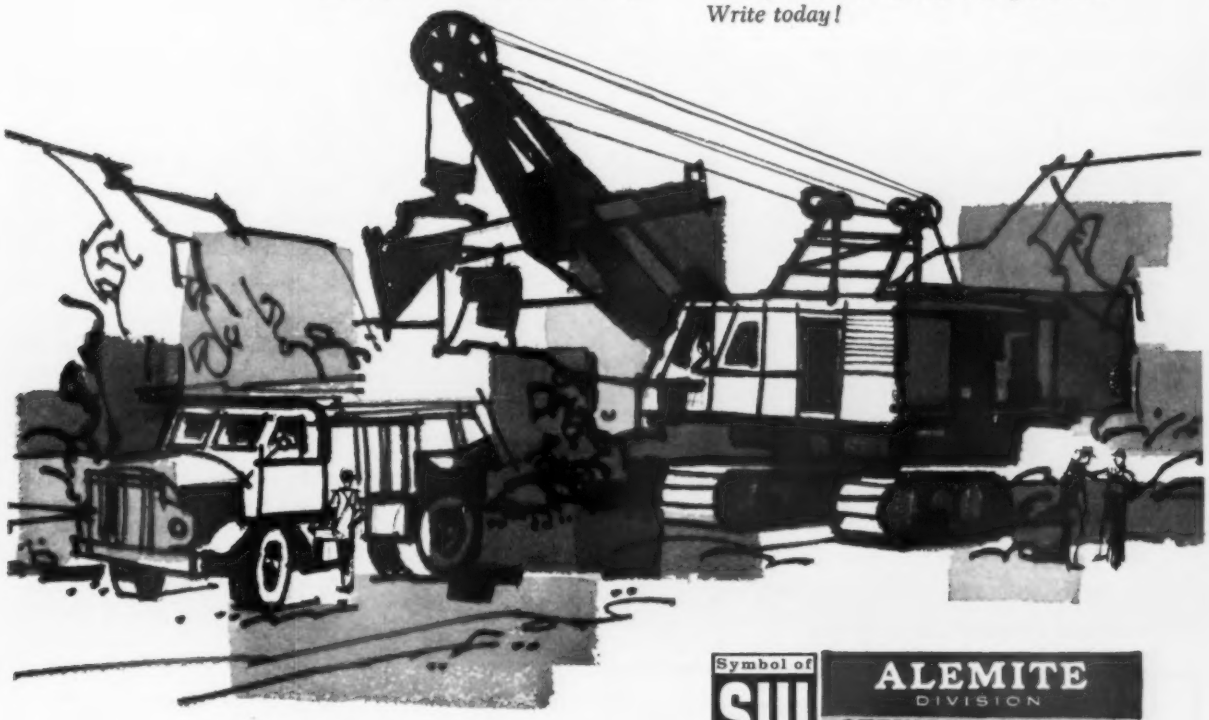
This centralized system is located on the crawler assembly of a giant quarry shovel. Other systems lubricate boom sheaves, house bearings, automatically.

For quarry shovels that operate 24 hours a day, protection against dust, dirt, and other elements is a must. With an Alemite Accumatic Centralized Lubrication system, around-the-clock production is insured.

Whether it's power shovels, crushers, dust collectors, conveyors, coolers or any piece of equipment needing lubrication, Alemite can "Tailor Make" a centralized system to eliminate lubrication problems.

Alemite Centralized Lubrication Systems protect equipment with pre-determined amounts of lubricants from one central point to every point where it's needed. Lubrication is quick, safe and positive. And there's no waste. Equipment life is extended, downtime sharply reduced. End result: more production . . . and increased profits.

*See "The Better Way"—a new, factual color film produced by Alemite to show how one mill has increased production and profits through modern lubrication practices. Write today!*



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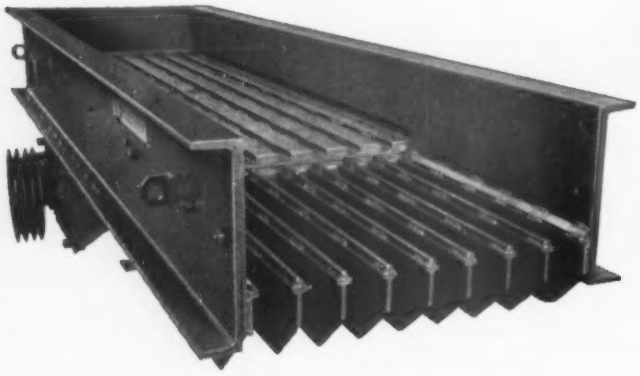
# SIMPLICITY

## GRIZZLY TYPE FEEDERS

1. FEED AND SCALP WITH ONE UNIT
2. ELIMINATE PLUGGING OF CRUSHER
3. REDUCE LOADING HEIGHT
4. PROLONG BELT CONVEYOR LIFE
5. LOWER MAINTENANCE COST
6. LOWER INSTALLATION COST
7. SAVE SPACE—COMPACT

Simplicity Grizzly Feeders are designed to convey and scalp in one operation, thus eliminating the costly apron feeder and separate stationary grizzly. Fines are scalped off and pass through the grizzly section, allowing only the oversize material to reach the crusher. Fines are deposited on the conveyor belt first, making a bed for the larger rock, thus contributing to longer belt life.



Simplicity Grizzly Feeders are spring mounted, which allows for heavy impact without damage to the machine. Impact bars will be added to the pan section at customer request. Side liners are standard at no additional cost.

Simplicity Grizzly Feeders are equipped with replaceable grizzly sections, which allows for various openings by simply changing deck sections, or the ALL NEW ADJUSTABLE Grizzly section which is so designed that one or more of the grizzly bars can be taken out, or added, to arrive at the opening desired.

Simplicity Grizzly Feeders are available in four separate models and in sizes for most operations.

Simplicity
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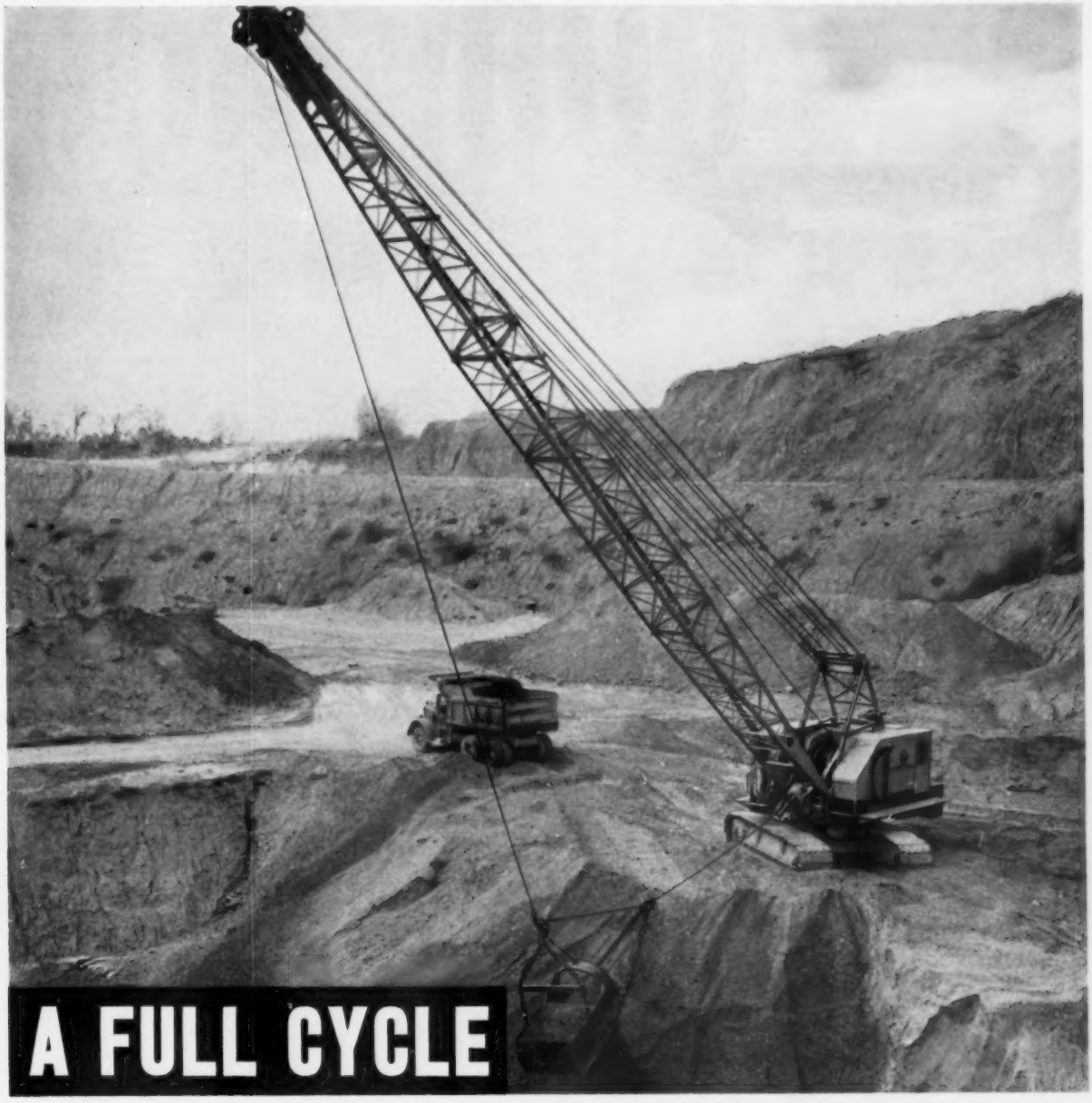
**FOR EXPORT:** Brown & Sites, 50 Church Street, New York 7, N. Y.

**ENGINEERING COMPANY • DURAND 12, MICHIGAN**

227



# A FULL CYCLE

# FASTER, MORE OFTEN WITH AN 805

The ability to dig in and get out *fast,* with a profitable payload on every cycle, has made the 805 a favorite in gravel pits everywhere. It's quick to respond under all digging conditions. With 2 or 3 yard bucket, 50 to 150 feet of boom you get the capacity and range needed to move more tons per shift.

A power assist on big main drum clutches provides finger-tip control, yet gives the operator positive feel of the load. Engaging speed is automatically controlled to cushion shock and impact loading, protect cable.

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# LINK-BELT conveyors

## The last word in value from the first name in conveyors

**BELT CONVEYORS** — Link-Belt serves as a single source for design, equipment and erection of *Job-Engineered* belt conveyors for small or large tonnages, for routes of any length. Link-Belt engineers have the selection advantage of industry's most comprehensive idler line—plus a broad range of pulleys, drives, terminal machinery and auxiliary equipment. Husky, *Pre-Bilt* sectional belt conveyors are also available.

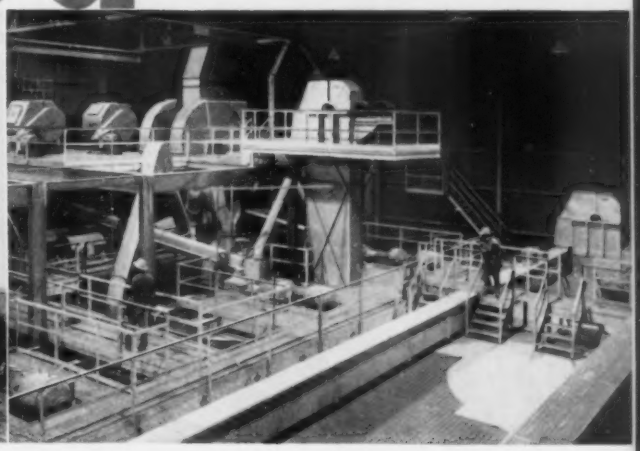
**"Conveyors unlimited"** means just that! Link-Belt offers *industry's most complete line of conveyors* . . . all built to quality standards that are second to none in the field of materials handling. And because Link-Belt makes such a wide variety of types and sizes, you can be sure of unbiased recommendations . . . can count on the operating economies and efficiencies that only perfectly job-matched equipment provides.

**Also important,** Link-Belt can provide *complete* handling systems . . . patterned exactly to your requirements with a background of more than 80 years of conveyor specialization. Our engineers are familiar with the particular handling needs of every industry. It's more than likely they have met—and solved—many problems similar to yours. We will design, equip and erect your entire installation . . . and accept full responsibility for its successful operation.

**For full information**—on single components or complete systems—large or small—contact your nearest Link-Belt office. Catalogs covering all conveyors are available on request.

# unlimited

The line that means savings, whether handling raw materials or finished products

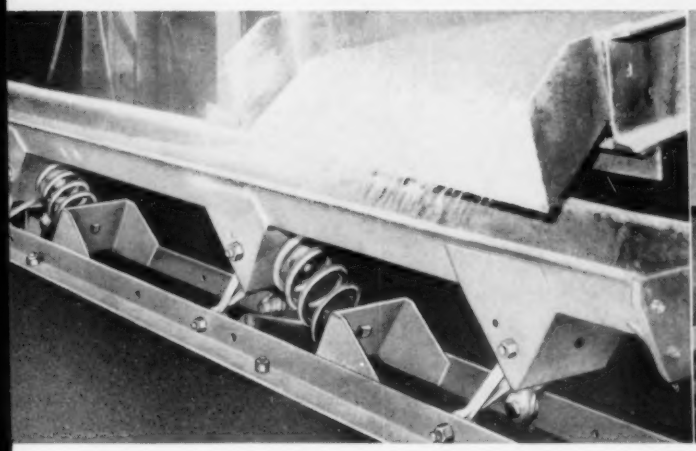


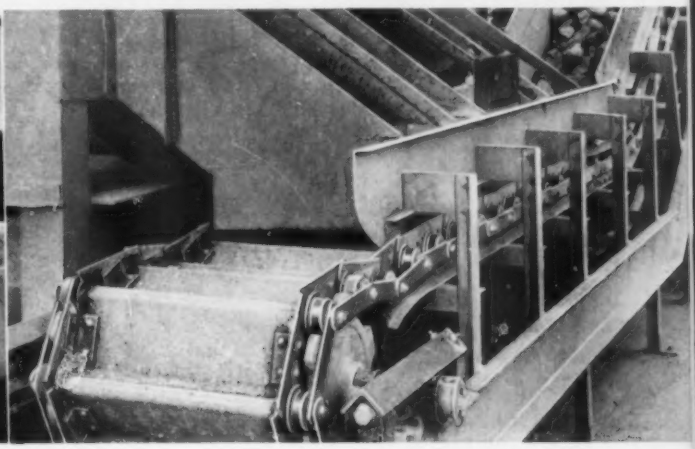
**JETSLINGERS** can hurl material as far as ninety feet, can pile to heights of thirty-five feet above discharge. Units consist of a tapered spout feeding a short, high-velocity belt conveyor. Material is thrown by means of centrifugal force, with control of both trajectory angle and direction of throw. Portable or stationary units available. *Jetslinger* adds new efficiency to ground storage operations.

**BUCKET ELEVATORS** — Unlimited solutions to inclined or vertical movement of a wide variety of materials—from chunks to powders. Fourteen types in four basic designs are built from integrated components—designed, fabricated and *factory-aligned* by Link-Belt for easy installation, reliable performance.

**OSCILLATING CONVEYORS** — Whether handling fine or coarse materials, Link-Belt's four types of oscillating conveyors—Flexmount, Coilmount, Heavy-Duty Coilmount or Torqmount—provide surge-free movement of materials. All types feature *full-time positive action*, yet operate as near to *natural frequency* as possible to minimize power requirements.

**APRON CONVEYORS** — Wide application range provides efficient handling of sand, rock, gravel and many other materials. Materials are moved with a minimum of degradation over horizontal or inclined paths, or a combination of both. Jointed, overlapping or interlocking apron pans form the continuous carrying surface. Variety of chains, coordinated with pan design, matches the conveyor to your needs.





## LINK-BELT

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This mark tells you a product is made of modern, dependable Steel.

# When we say fast delivery of grinding balls . . . . . we mean it!

**No delivery problems.** We don't really shoot USS Grinding Balls out of a cannon. It takes too long to load them! We deliver them in a hurry—all the balls you need, packed and loaded as you specify, exactly when you need them.

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# The Editor's Page

## Construction Again Leads the Way

WHEN the President recently signed into law the Federal-Aid Highway Act of 1961, it became almost a certainty that construction volume in the coming years will continue to climb steadily upward. This bill provides additional funds at an increasing rate for this program and ensures stable or slightly higher levels of road-building activity during the next ten years. New taxes will raise most of the money needed, on a pay-as-you-go basis.

The new highway law (Public Law 87-61) ensures the completion of the 41,000-mile Interstate System of highways by 1972 and increases the total authorizations for the system by $11,560 million. This amount increases the original 1956 cost estimates to a total of $41.6 billion. The additional cost is attributable to mileage added to the system, rising construction costs during the first few years of the program, and additions to estimates resulting from more exact planning and specifications for roads. Future conditions are expected to be more stable since construction costs for highways have leveled off and may even go a little lower in the future.

AUTHORIZATIONS for fiscal 1962—$2.2 billion—are not affected by the Act. The 1963 authorization is up $200 million to $2.4 billion. In the succeeding years authorizations will gradually increase to a peak of $3.0 billion in 1968-69. For 1970 and 1971 the figures, both new, are $3.0 billion and $2.885 billion, respectively.

The new highway law will make available an additional $9,682 million, including both new taxes and transfers from the Treasury. The new taxes, all effective as of July 1, are as follows:

Tires for highway use—a 2-cent increase to 10 cents per pound. The tax on off-highway tires remains at 5 cents per pound.

Inner tubes—a 1-cent increase to 10 cents per pound.

Tread rubber—a 2-cent increase to 5 cents per pound.

Heavy trucks (over 26,000 lb.)—the tax is doubled to $3 per 1,000 lb.

Gasoline and diesel fuel—the 4-cent per gal. tax which was to have reverted to 3 cents on July 1 was continued.

In order to make up the revenue which otherwise would have been lacking in the Highway Trust Fund, half of the 10 percent tax on trucks, buses, and trailers will be transferred from the general funds.

THE Interstate System is only one segment of highway construction activity but it is expected to contribute to a continuation of highway levels at the present rate, close to $6 billion a year. Other federal-aid programs for the urban, primary, and secondary road systems are not affected by this Act. It is expected that the expenditures for this type of construction will be gradually increased from the present level of $925 million annually to about $1.0 billion. Other state and local programs are expected to show little change.

The higher taxes will result in higher costs for truckers, and ultimately for shippers and the public in general, but it is expected that the benefits will far outweigh these increases. President Kennedy, in signing the bill, said that it will "increase our defense readiness, decrease the appalling highway accident toll . . . and stimulate economic development." The aggregates and cement industries, in particular, will also benefit directly from the greater and more stable volume of demand for their products.

Walter E. Trauffer

By WALTER E. TRAUFFER

# Many Handicaps Overcome

## in Pennsylvania Plant to Produce

# State Specification Rock

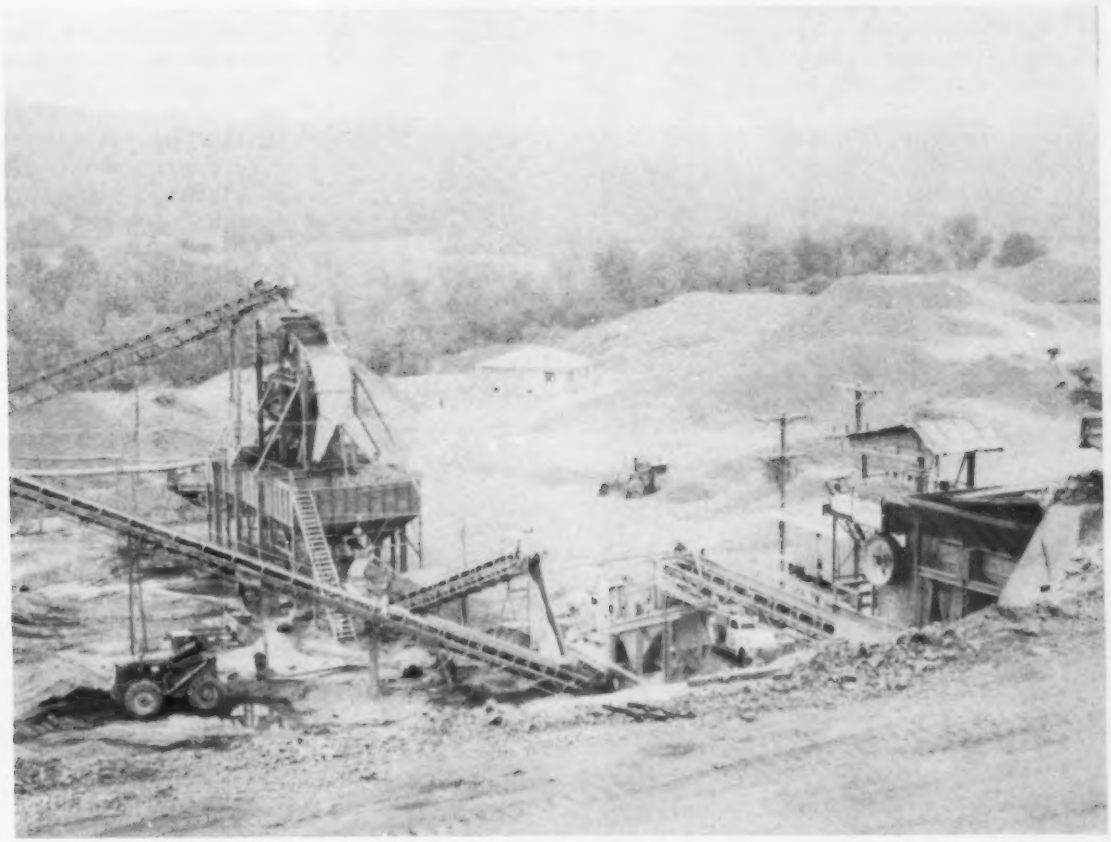
THE new 200 to 250-t.p.h. crushed stone plant of the Emlenton Limestone Company at Turkey Creek, near Emlenton, Pa., has an unusual number of interesting features. Not the least of these is the one which had much to do with the decision to build the plant. This is the fact that it is the farthest north of any crushed stone plant in western Pennsylvania, giving it a wide marketing area for crushed stone base course and other products. The 17-ft. vein of limestone is under 20 to 60 ft. of overburden, which is considered average stripping in this area. The plant is simple in design but will produce all seven state highway specification sizes at one time, plus agstone.

Emlenton Limestone Co. is an independent corporation of which William W. Gibb is president and John D. Whitehill is secretary. Mr. Gibb is also vice-president of the Western Pennsylvania Asphalt Paving Company of Franklin, Pa., now a division of the Interstate Amiesite Co. Earlier he had been with the state highway department for 20 years and the tar products division of the Koppers Company for five years. Mr. Whitehill has an extensive background in highway department and construction work. Byron Henderson, plant superintendent, has had much experience in crushed stone production.

As the potential business in the area developed, these men looked for a deposit meeting their requirements. When this was found near Turkey Creek, about 50 miles northeast of New Castle, Pa., it was core-drilled thoroughly to determine its extent and the amount and nature of the overburden, etc., before the corporation was formed. The stone was found to meet all Pennsylvania State Highway Department Type A specifications, which is tops for all types of construction. It is in the Ferriferous limestone formation and has coal below it and some coal with shale and clay above it. A total of 600 acres is owned or under lease, containing an estimated 25 million tons of limestone.

The plant design was based on the combined experience of these

THE 1½-CU. YD. DIESEL SHOVEL loading to one of the firm's 20-ton rear-dump quarry trucks.



GENERAL VIEW of Emlenton Limestone Company's plant at Turkey Creek, Pa. The primary crusher and vibrating grizzly feeder are in the foreground, and the conveyor to the new scrubbing department is at the left.

ANOTHER VIEW of the plant from the bin end. In the foreground is the new scrubbing department.

men, working in co-operation with the Eagle Crusher Company. As stated above, the plant is notable for its flexibility, which permits meeting varying demands for a large number of sizes. All seven highway specification sizes are now made at one time, ranging from 4-in. No. 4 crushed aggregate base stone to No. 1 screenings, which is minus ¼ in. Provision for recrushing coarse sizes without rehandling is a cost-saving feature. Full advantage was taken of the hilly terrain in designing the plant. The Eagle Crusher Co. supplied all of the equipment and made the crushers, the bins, and the conveyor supports.

THE 7-IN. DRILL, which is mounted on a special truck chassis, along with a compressor, a diesel engine, and a dust collector.

Below:
THE DIESEL DRAGLINE has a 110-ft. boom and a 5½-cu. yd. bucket which removes overburden.

Overburden is removed by a Page 618 diesel dragline with a 110 ft. boom and a 5½-cu. yd. Hendrix bucket. Some blasting is necessary to remove the sandstone and shale. The dragline makes 90-ft. wide cuts and overcasts into the worked-out section of the quarry.

Drilling is done by a Reich Bros. Model T650-RO drill using a 7-in. Timken carbide bit. This drill has a General Motors diesel engine, a Power Vane 365 compressor, and an American Air Filter Type D Rotoclone, all mounted on a Cline truck chassis. There is a dust collector hood around the drill.

Drilling is also being done by a Chicago Pneumatic Airtrac drill with 2½-in. Timken carbide bits. Air is supplied by a Gardner-Denver 600 compressor. Holes are drilled on a 7- by 9-ft. pattern on the 17-ft. high face. Straight Gianite WR ammonium nitrate is used, with a primer. This is poured from 50-lb. bags into the holes, which are dry. Shots ranging up to 200 holes and 10 rows are fired electrically, using No. 0 to 8 delays. This combination has been found to give the best pileup of material with the least noise and vibration.

A Northwest Model 6 shovel, with a Murphy diesel engine and a 1½-cu. yd. dipper, loads the stone into two 20-ton Euclid rear-dump quarry trucks. These units now haul about 300 ft., mostly downgrade, to the plant. A Caterpillar D8 bulldozer is used to clean up in the quarry and to maintain roads. Secondary breakage is done with a 3,000-lb. drop ball on a Michigan Truckcrane TLDT-20.

The trucks dump the rock onto a 4- by 12-ft. Simplicity 2-deck vibrating grizzly with hoppered sides. This has 2-in. openings on the top deck and 1-in. on the bottom. The minus 1-in. material, largely dirt, goes *via* a 24-in. by 60-ft. conveyor to a waste pile. The 1- to 2-in. material drops onto the main belt conveyor (No. 1). Plus 2-in. rock goes into the 30- by 44-in. Eagle primary jaw crusher. This is V-belt driven by a 150-hp. G-E induction motor and is set at 8-in. maximum opening in order to get rid of the mud. The crusher product also goes on the No. 1 conveyor. The entire plant is controlled by the crusher

operator, who can see all operations from his post.

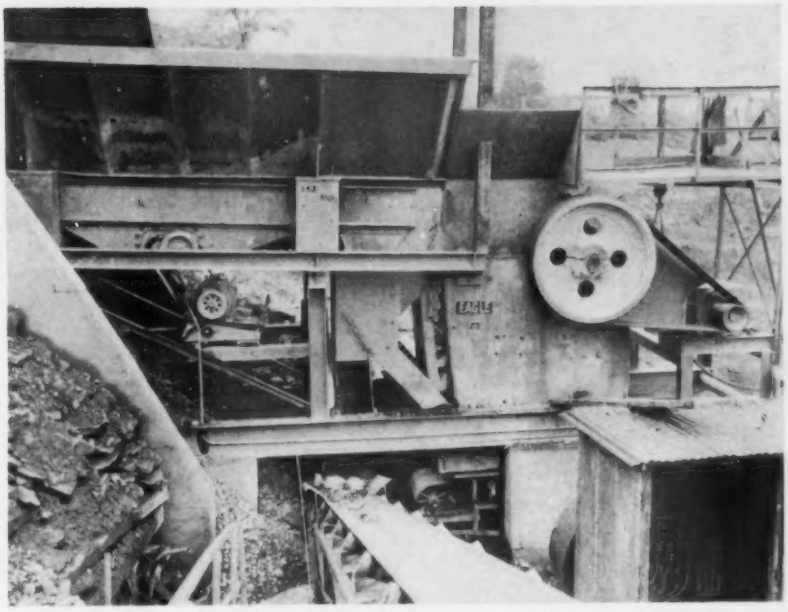
Belt conveyor No. 1 is 30 in. by 40 ft. and is horizontal. It discharges to a 4- by 12-ft. 2-deck Seco screen with 4- and 1½-in. wire cloth. The 3½ in. plus oversize goes to a 30- by 44-in. Eagle hammermill, which is V-belt driven by a 300-hp. G-E motor. All minus 4-in. material and the crusher product are carried on a 32-in. by 140-ft. belt conveyor to the top of the screening bin.

This material is screened over a 4-ft. by 12-ft. 2-deck aggregate scalping screen. Plus 2½-in. stone goes into a 4-ft. by 8-ft. Universal revolving scrubber. Minus 2½-in. plus ¼-in. material goes into a 12-in. by 30-ft. McLanahan log washer. Minus ¼-in. stone goes into a 40-ton storage bin under the scalping screen.

Material from the scrubber and log washer are discharged on a 30-in. by 46-ft. conveyor which, in turn, is discharged on a 30-in. by 130-ft. conveyor and carried to the top of the classifying screens over the eight 45-cu. yd. loading bins. All water discharge, except from the scrubber, flows into a 24-in. by 20-ft. McLanahan fine-materials screw, which recovers the minus ⅛-in. plus No. 100 stone.

The classifying screens consist of two 6- by 16-ft. 2-deck Seco screens. Minus 1-in. material through the bottom deck of the top screen goes to a second 6- by 16-ft. Seco 2-deck screen. This unit has ⅜-in. and 4-mesh wire cloth and is equipped with Link-Belt washing spray nozzles. It makes No. 2B and No. 1B sizes, which go direct to the bins. A flop gate arrangement can combine No. 2B off the top deck and No. 1B off the bottom deck to make No. 2. These two sizes also go to the bins.

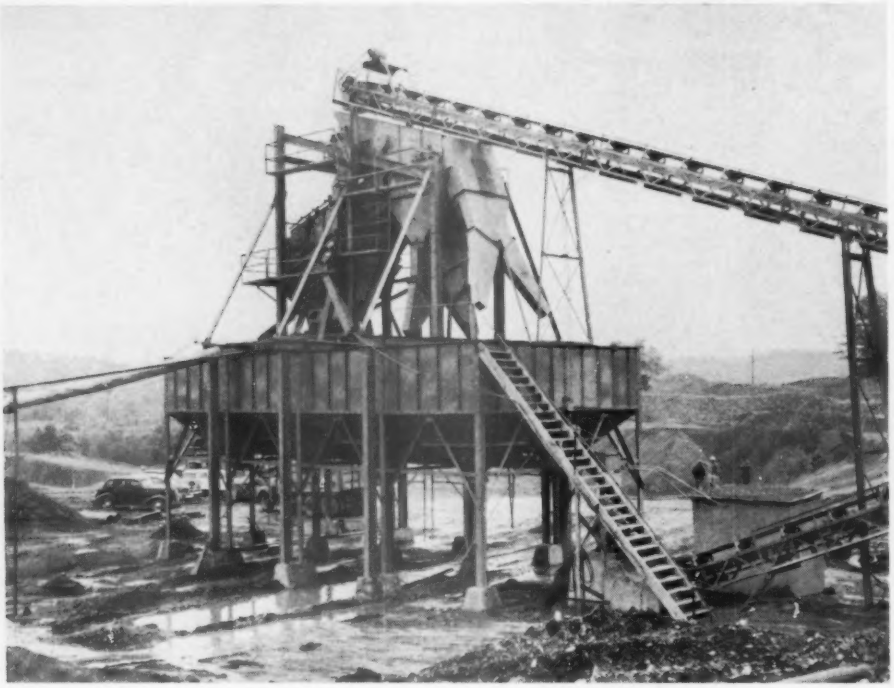
Plus 4-in. oversize in one of the bins is recrushed to any desired maximum size to make products more in demand. This rock is fed through a clamshell gate to a 24-in. by 60-ft. reversible reclaiming conveyor under and between the two rows of bins. This conveyor feeds to a 24- by 24-in. Eagle hammermill which is driven by a 150-hp. G-E motor. Any of the other coarse sizes can also go to this crusher if desired. The crusher product is carried on a 24-in. by 65-ft. inclined belt conveyor back onto conveyor No. 2 for rescreening.



A CLOSE-UP OF THE VIBRATING GRIZZLY and the 30- by 44-in. jaw primary crusher. The conveyor in the foreground carries off minus 1-in. stone and dirt.

THE 4- BY 12-FT. SCALPING SCREEN and the 30- by 38-in. secondary hammermill. The primary crusher is in the background.

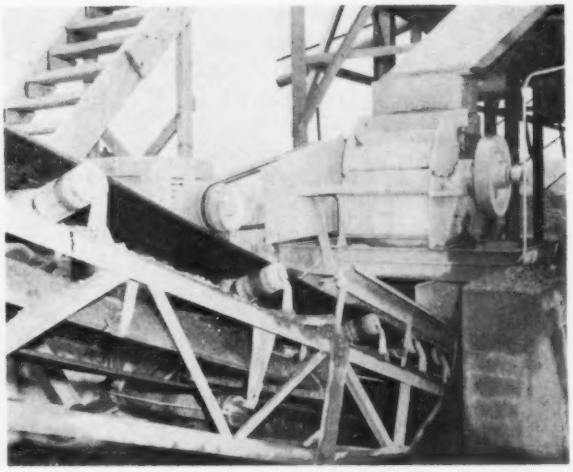
The reversible reclaiming conveyor, running in the opposite direction, can blend from any of the bins for loading into trucks. Straight sizes are loaded by gravity through clamshell gates under the bins. Truck shipments are weighed on a 50-ton Howe scale and Weightograph. All stockpiled materials are reclaimed by two front-end loaders—a 3-cu.



THE TWO SIZING SCREENS over the truck-loading bins. A conveyor below the bins returns coarse material to the crusher, right, which discharges to the return conveyor.

yd. Allis-Chalmers TL 20 and a 2-cu. yd. Pettibone Mulliken.

Wash water for the plant is provided from two 350-ft. drilled wells by 15-hp. Fairbanks-Morse turbine pumps with a combined capacity of 200 g.p.m. This water can be pumped direct to the plant or into a 2,500,000-gal. reservoir behind an earth-filled dam. A 40-hp., 600-g.p.m. Fairbanks-Morse centrifugal pump feeds from the pond to the plant.



THIS 24- BY 24-IN. HAMMERMILL is used to recrush coarse sizes from bins. The conveyor returns to the sizing screens over the bins.

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**First Quarter Gypsum Output Continues Declining Trend**

Production of crude gypsum from domestic mines continued to decline in the first quarter of 1961, according to reports from producers to the U.S. Bureau of Mines. Output of 2,000,000 tons was 7 percent lower than in the corresponding quarter of 1960. Imports dropped 27 percent.

Sales of uncalcined-gypsum products declined only 2 percent, but production of calcined gypsum decreased 16 percent compared with the first quarter of 1960.

Agricultural gypsum and dental and orthopedic plasters showed increases. Sales of all other gypsum products were well below those of the same period in 1960.

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Net sales and operating revenue of $35,644,000 for the six months ending June 30 were reported for Permanente Cement Company, approximately 5 percent above the figure for the first half of 1960. Net earnings were $2,906,000 (51 cents per share), compared with $2,748,-000 (48 cents per share), for the first half of 1960.

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Sales and earnings reported during the six-month period ended June 30 for Lone Star Cement Corporation are as follows: billings (less discounts), $44,940,157, compared with $44,869,065 in 1960; net income, $4,416,476, compared with $4,468,913 in 1960.

# American Cement's Home . . .

## *A Showcase of Concrete Beauty*

The economies in reinforced concrete construction resulted in about 10 percent less cost to erect this beautiful structure than a conventional steel frame office building. Floors in the nine-story tower are columnless because the floors between the exterior load-bearing walls and the central service core were suspended. The lower four levels furnish space for parking about 400 cars.

THE new American Cement Corporation building in Los Angeles is an impressive example of a bold concept in modern architecture. It was designed to be a show place of functionally and esthetically applied concrete construction. Structural members are exposed — comprised of precast elements originating in sculptured forms that take full advantage of the plasticity of reinforced concrete.

The building consists of a nine-story tower (above the parking levels) with a central service core, and a load-bearing grid outer wall comprised of 2-ton precast "X" members, each one story tall, forming the striking exterior. Each floor of the tower is suspended between the elevator core and the exterior structural "X" members, providing a columnless interior from the fourth to the 13th floors.

In a departure from conventional construction and its single structural theme, there is a change of structure within the building to accommodate a functional change. The "structure within a structure" originates between the fourth and fifth floors. At the latter level, a heavily reinforced concrete "transition" box girder transfers the weight from the exterior walls to eight monolithic columns that carry the load to the foundations. Above the fifth floor are the offices, and below the fourth are parking levels for 400 cars.

Construction was started late in the fall of 1959 and completed last May. In mid-June tenants began occupying space, and occupation is now complete. The building was erected at a cost of $3½ million—considered 10 percent less than would be required for the average comparable office building, due to the use of reinforced concrete construction throughout. It provides 122,000 sq. ft. of office space, 100,000 sq. ft. of parking space, and 10,000 sq. ft. of commercial and lobby area.

The striking exterior wall is comprised of these precast concrete structural elements. Each of the 450 "X" members weighs 4,500 lb. They provide exceptionally high strength and also make an attractive exterior wall. In addition to these structural members, 250 sculptured concrete grill members for the parking levels and 530 floor beams were precast for the new building.

The major tenants are American Cement Corporation, which owns the property on which the building was erected; Riverside Cement Company; and Aetna Insurance Company. Gilbert-Rothschild & Company, Beverly Hills, is the owning and managing firm which financed the project. General contractor was Peter Kiewit Sons. Planning, architecture, and engineering were handled by the firm of Daniel, Mann, Johnson & Mendenhall, and Stephen Oppenheim, design architect. Malcom Leland was sculptural consultant.

American Cement Corp. was organized in 1957 through the merger of Peerless Cement Company, Detroit; Hercules Cement Company, Philadelphia; and Riverside Cement Company, Los Angeles.

By BUREN C. HEROD

# South Dakota Cement EXPANDED 500 PERCENT

## ■ 10-year, $10,000,000 program involved nearly every department, from quarry to loading

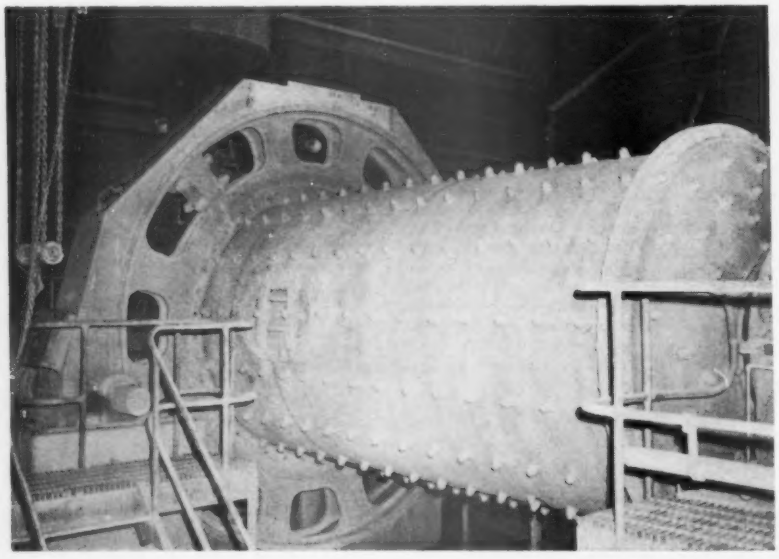
IN the last ten years, capacity of the South Dakota Cement Plant at Rapid City has been increased 500 percent—the striking result of a program that involved major additions or revisions in almost every year since 1950. While capacity was raised from 2,000 to 10,000 bbl. per day, maximum operating efficiency was an equally important objective, and this state-owned and -managed facility has set material and labor costs per barrel that rank with the best of its counterparts in private industry.

The nucleus of the 10-year program was the installation of a 375-ft. kiln which more than doubled the productive capacity represented by the original pair of 150-ft. kilns (PIT AND QUARRY, January, 1951, page 128). Subsequent projects undertaken have affected virtually every phase of the operation, including the quarry, raw material preparation and handling, raw milling, burning, clinker storage, finish milling, cement storage, and loading.

First of the major additional facilities installed in this program was a third finish grinding circuit, involving an 8- by 12-ft. preliminary mill and 9½- by 15-ft. secondary, and a group of 12 storage silos. These units were added in 1953. During the next year a completely new crushing-and-screening plant was built to process raw limestone.

A fourth group of silos, ten in all, was erected in 1955 to provide increased loading capacity in handling bulk rail shipments. During the same period larger excavating and hauling equipment was acquired for the quarry. The next year there was considerable activity involving the kiln, raw milling, and finish milling departments. Number 4 kiln, identical to the unit added in 1950, was installed; a third raw grinding circuit was provided, including an 8- by 12-ft. preliminary mill and a following 7- by 22-ft. tube mill; and an 11½- by 17-ft. finish mill was added.

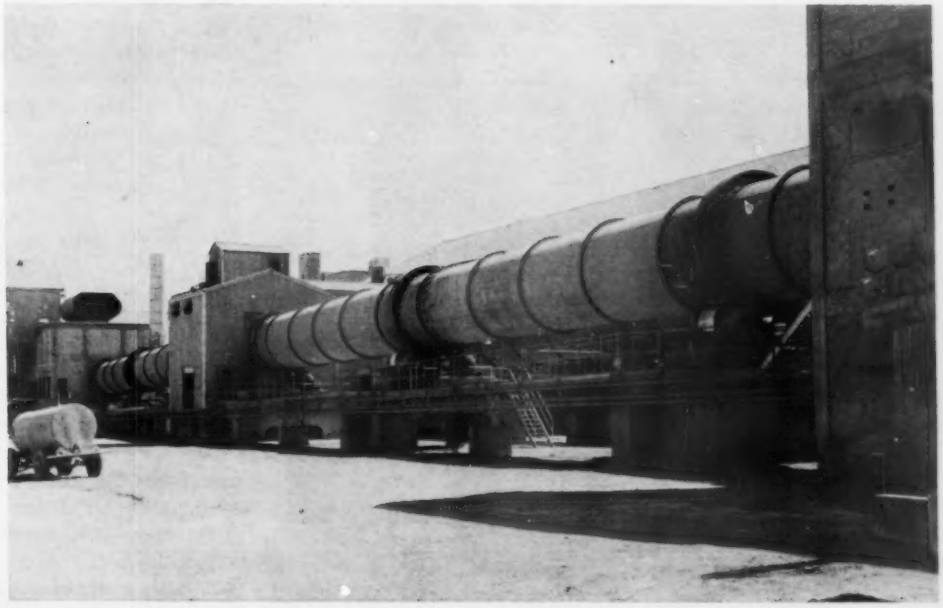
In 1958 the third large kiln was placed in operation, and a bulk truck-loading facility was constructed. A significant change in the



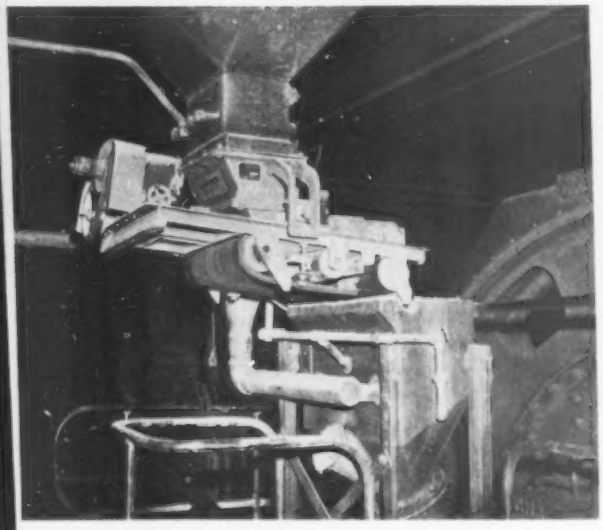
THE 8- BY 15-FT. ROD MILL shown here was a major factor in modernization of the raw mill department. It takes the place of two preliminator mills and represents a saving of about 300 hp.

**CAPACITY AND OPERATING EFFICIENCY** were parallel objectives in the extensive program that involved expansion and modernization of virtually every phase of South Dakota Cement's plant at Rapid City.

**ONE OF THE MAJOR PHASES OF THE PROGRAM** was the installation of this third 11- by 375-ft. kiln. Together, the three newer kilns alone represent a daily capacity of 8,000 bbl. Another 2,000 bbl. per day can be produced in the two older kilns.

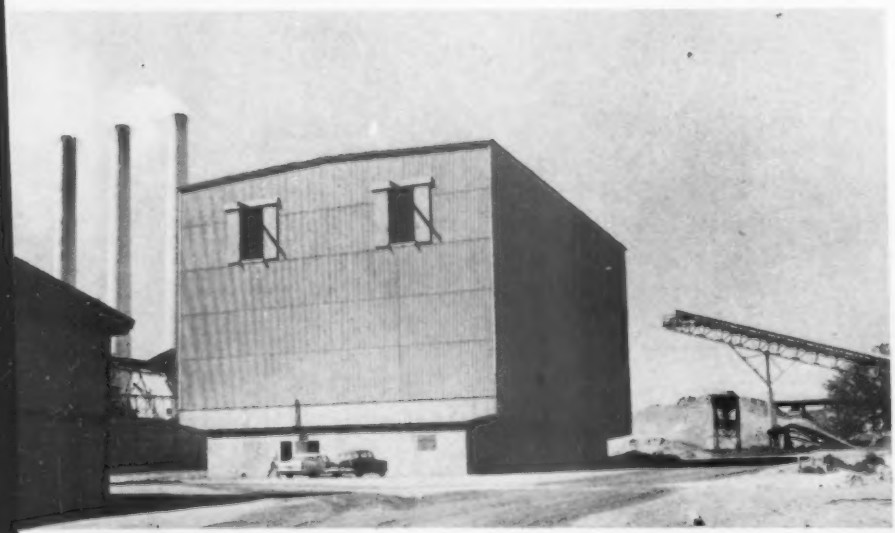


THIS QUARRY VIEW shows some of the newer and larger drilling, excavating, and haulage equipment acquired in recent years. The operation is exceptionally fortunate in its raw material supply—all are practically in the plant's "backyard".



Left:
FEEDERS of this type deliver raw materials to the raw milling circuits.

Below:
THE NEW SLURRY BLENDING TANK STRUCTURE is an unusual installation. The building encloses six 2,000-bbl. concrete tanks of post-tensioned prestressed construction. At ground level below the tanks is the pump and compressor room, and laboratory.



raw mill department was made in 1959 through the addition of an 8-by 15-ft. rod mill and following 8-by 22-ft. tube mill for the fourth raw-grinding circuit. The rod mill now takes the place of two preliminary mills. In providing feed for both the No. 3 and No. 4 mills the rod mill represents a saving of 300 hp. in raw milling requirements. Other work at this time included new slurry tanks and raw material distribution revisions.

In total, these projects involved an expenditure of about $10 million. Based on plans laid out by operating officials, the bulk of the detailed engineering of this extensive expansion was done by the MacDonald Engineering Company. All major processing components in the cement plant proper were supplied by Allis-Chalmers.

Among the many improvement features, those considered of primary importance include the three newer kilns, which together represent a capacity of 8,000 bbl. per day; the crushing and screening plant; the new single-unit finish mill; and the rod raw mill. The latter, in particular, has proven of maximum benefit. In addition to the saving of horsepower through the elimination of one of the preliminary raw mills, it has delivered a very uniform product at a good production rate. With the same Blaine fineness as before, better strength has been realized.

**Raw Materials** The prime factor in the unusually low cost of raw material entering the process is the availability of the various constituents. All are obtained virtually in the "backyard" of the operation. The limestone quarry is located on the same tract as the mill, and all other materials—shale, sand, gypsum, and iron—come from nearby pits in this richly-endowed area of the Black Hills. Shale and iron are delivered by contract operators, and the rest are obtained in the organization's own operations.

One of the new items of quarry equipment is a Joy Middleweight Champion blasthole rig with which 6-in. holes are sunk. From 8 to 12 40-ft. holes are drilled at one time in a single row, on 20-ft. centers and with 20-ft. burden. Three or four holes charged with Atlas prills

are shot daily, and the yield averages about 860 tons of stone per hole. Since the quarry is close to built-up areas, blasting is carefully controlled within certain limits of charge and holes per shot, and seismograph records are made regularly.

The new quarry shovel is a 3½-cu. yd. electric-powered P&H 1055E machine. Quarry haulage is now handled by four 15-cu. yd. trucks, three Kenworths, and a Dart, on a grade favorable to the load between the shovels and the new crushing plant. The latter is equipped with a 36-55 Allis-Chalmers Superior gyratory primary crusher, a 6- by 16-ft. double-deck A-C Ripl-flo screen, and a 42 x 82 Jeffrey reversible swing hammer secondary crusher.

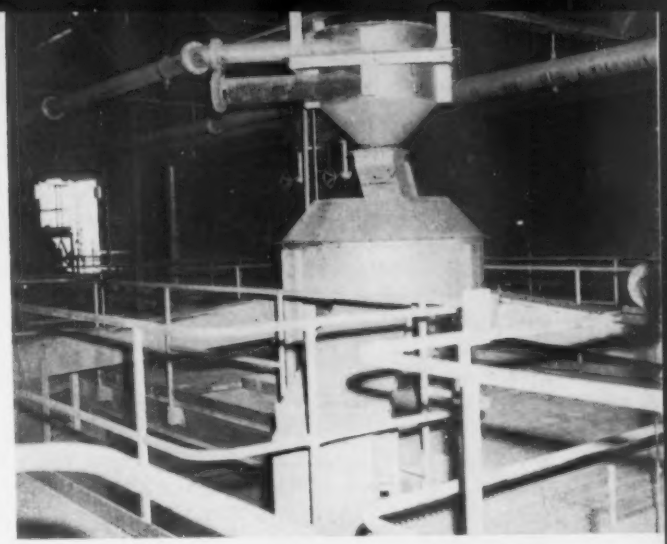
Quarry-run stone is dumped directly into the gyratory, and primary crusher-run is then transported on a 36- in. belt to the totally enclosed screen in the screen building. Oversize is returned from the screen to the crusher building on a 30-in. belt, and delivered to the hammermill secondary. Products of this reduction join the primary discharge in flow to the screen building.

The older crushing operation has been retained and is used for the reduction of shale and gypsum. These materials are then carried into the raw storage building on the original belt conveyor system. Minus ½-in. stone from the newer crushing and screening plant is transported and distributed to appropriate storage sections on a Stephens-Adamson belt conveyor system. The latter is equipped with Bindicators on discharge chutes to signal buildup.

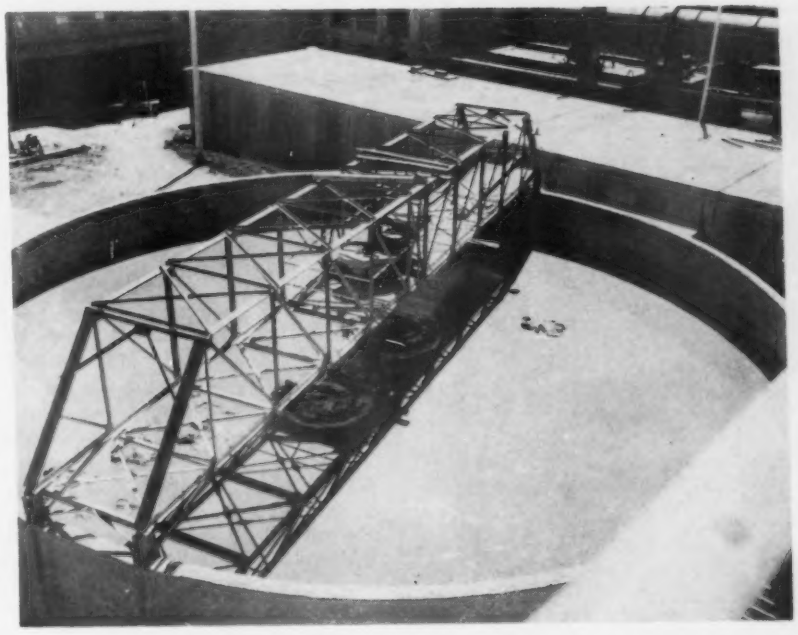
**Raw Milling** Aside from the major project of expanding the raw mill department from two to four circuits, no revisions to the installation as described in the previous PIT AND QUARRY report were undertaken. Feed to the preliminators of the first two circuits and to the rod mill in the newer two is initiated on Hardinge constant-weight feeders, as before. Ball charges of the preliminators and the tube mills are also unchanged.

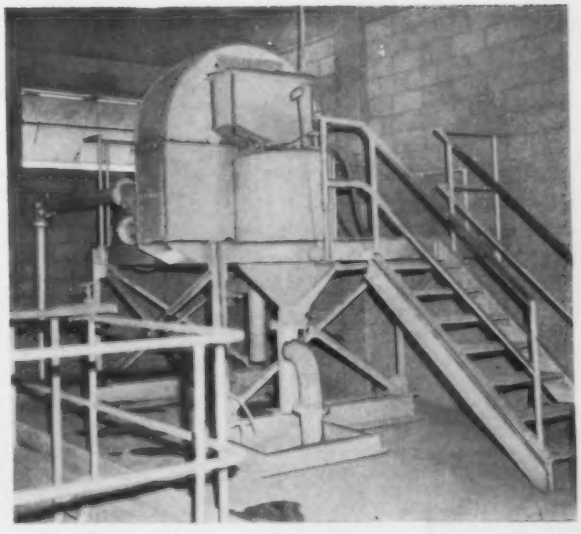
The new rod mill is charged with 114 3-in. rods, 141 2½-in., and 215 2-in. Charge makeup is made with 3-in. rods. This mill is driven by a 400-hp. motor. (The two pre-

Right:
RAW MILL SLURRY is delivered to the blending tanks through this distributing turnhead and flumes.



Below:
ONE of the two 10,000-bbl. storage and kiln feed tanks.





THIS FERRIS WHEEL SLURRY FEEDER for the newest kiln is identical to those supplying the two companion units.

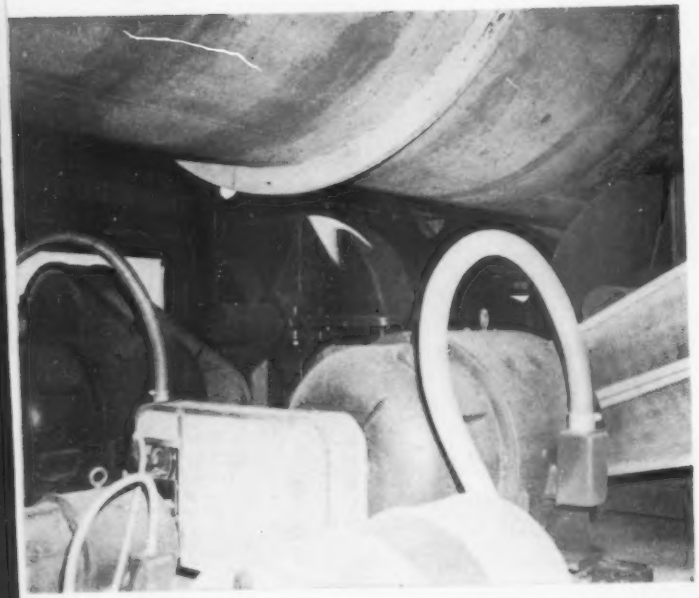
liminator mills it supersedes had 350-hp. motors.)

Slurry from the above milling circuits has a moisture content of about 35 percent in type I material, and approximately 31 percent in types II and V. Fineness is 88 percent plus passing 200-mesh.

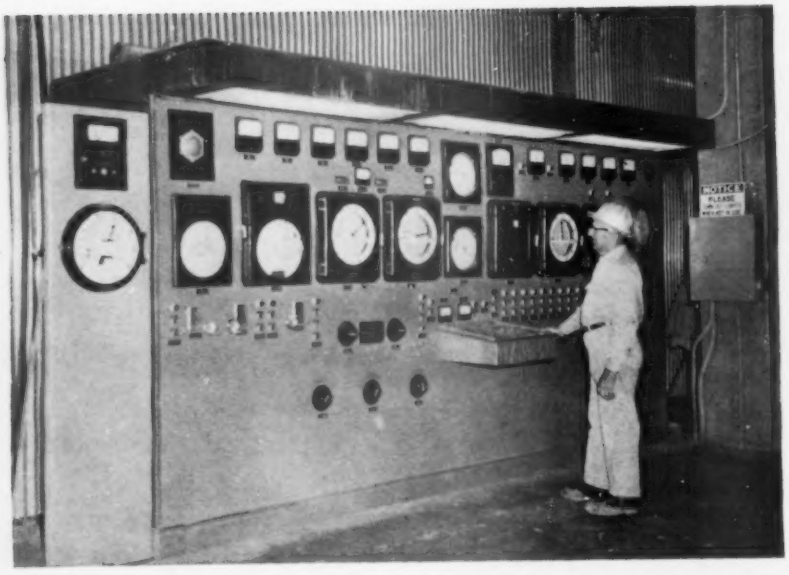
**Slurry Blending** Raw mill discharge is transferred by 4-in. Wilfley pumps to the new slurry blending tank structure. This is comprised of six interconnected 2,000-bbl. concrete tanks which are of post-tensioned prestressed construction and gunited. On top of the tanks, and under roof, is a common distributing turnhead through which the slurry is delivered. Below the tanks, at ground level, is the pump-and-compressor room.

About 3 hours are required to fill a tank; and blending is done by transferring from one or two tanks into a third. Wilfrey pumps handling the transfer are housed in the pump room noted above. Air for the Dorr-Oliver mechanical and air agitators in the tanks is provided from Fuller compressors driven by 125-hp. A-C motors.

From the blending tanks, slurry is pumped to the two 10,000-bbl. storage and kiln feed tanks which were installed at the same time as the first large kiln (No. 3). In an emergency, one of the latter tanks may be used for blending.



KILN DRIVES are enclosed. Shown here are the two 75-hp. motors and reducers for the newest kiln. One of the motors drives a generator with which feeder drive is synchronized to kiln speed.



Below: KILN CONTROL and instrumentation panel on the firing floor. Burning control is based on $O_2$ determination.

**Kilns** The newest of the three large kilns (No. 5) is identical to its companions. All are 11- by 375-ft. units, driven by pairs of 75-hp. A-C motors through Falk reducers. Currently, natural gas is used for firing, with oil as a stand-by fuel.

However, the cement plant commission has authorized investigation of conversion to a multiple-fuel set-up that would also permit firing with coal. If the step is taken, the plant will be able to use the most economical fuel at any given time. This will offset the rising cost of gas and also its use on an interruptible basis. Actually, the two original kilns were equipped to fire with coal, but they are now stand-by units. Fuel consumption on the three large kilns is about 1,000,000 B.t.u. per bbl.

The kilns are supplied with slurry through ferris wheel feeders for which the drive motors are synchronized with kiln speeds through generators driven by one of the respective kiln motors. The initial 90 ft. of the kilns from their feed ends is occupied by a chain section.

Instrumentation for the new kiln is similar to that of its two companion units, including the following: Leeds and Northrup draft control, Hays draft recorders; L&N speed recorder, kiln motor tachometer, and temperature recorders; and a Rayotube installation on the hood. The kilns are operated at 76 to 78 r.p.h., and burning temperatures are normally 2,700 deg. F. Burning control is based on $O_2$ determinations, this factor being held between 2.5 and 3 percent. Kiln exhaust exists at approximately 480 deg., with induced draft provided by a No. 8 Sturtevant fan. Each kiln is provided with its individual stack.

Primary combustion air is furnished by A-C Turbo-Blowers. Secondary air is taken from the coolers, which are equipped with American Blower fans. The coolers—A-C air-quenching grate units—discharge

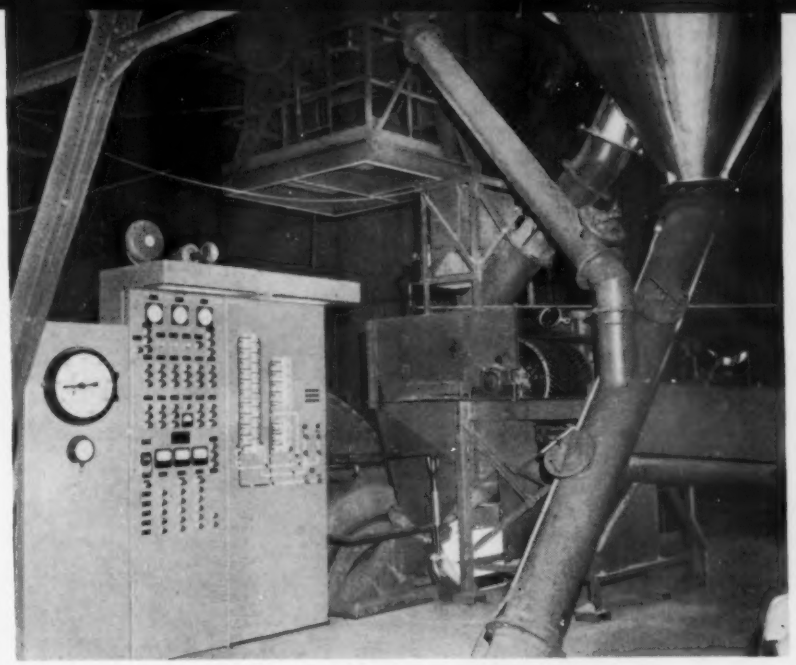
clinker at a temperature of about 150 deg.

Expansion of the kiln department was accompanied by enlargement of the clinker storage facilities. Although the different clinkers had not formerly been stored separately, this is now done with type I in one area, and type II in the other. They are transferred from the kiln coolers on reciprocating apron conveyors, and placed in storage by bucket elevator and belt conveyor distributing systems.

**Finish Milling** No. 3 and No. 4 finish mill circuits are housed in a mill building at the opposite end of the clinker storage area from the two older finish mills. The latter, along with the two original kilns, are on stand-by.

In the newer finish grind operation, No. 3 circuit has an 8- by 12-ft. preliminary mill, with a 400-hp. drive, and a 9½- by 15-ft. secondary mill driven by a 700-hp. motor. The former is charged with 31 tons of 3½- to 2-in. balls, and the secondary with 49 tons equally divided between 1½- and 1-in. balls.

No. 4 circuit is equipped with a 1,250-hp., 11½- by 17-ft. single-unit mill. There are 85 tons of 3½- to 1-in. balls in the charge. The two circuits include 16-ft. Sturtevant separators and F. L. Smidth cement coolers.

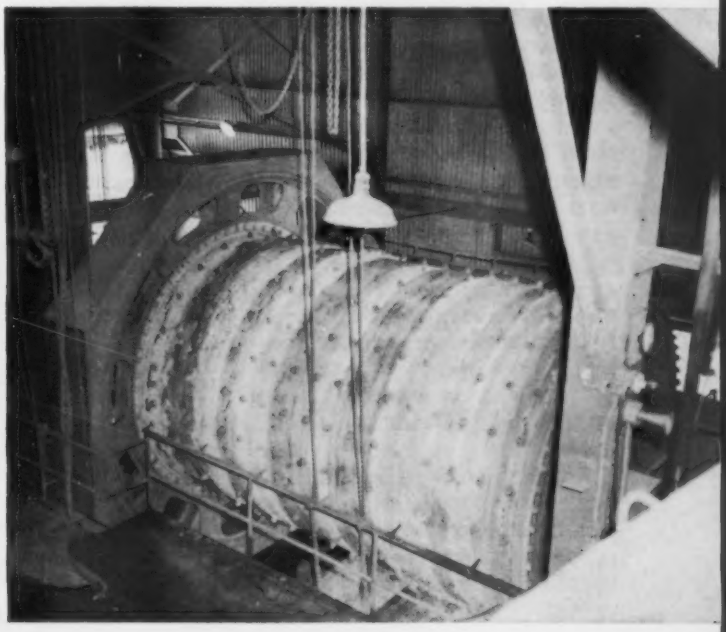


Above:
THE FINISH MILL DEPARTMENT CONTROL PANEL, and schematic distribution diagram. There are two finish mill circuits —one with preliminary and a secondary mill, and the other with a single-unit mill. Each circuit incorporates a 16-ft. separator and a cement cooler.

**Cement Storage Loading** Finish mill products (3,000 Blaine, or higher) are transferred *via* Fuller-Kinyon pumping lines to the four groups of storage and loading silos. Altogether there are 38 silos which, in total, provide a capacity of more than 500,000 bbl. As noted earlier, two of these groups —one of 10 units and the other of 12—were built within the last seven years. (*Turn page*)

Below, left:
COOLING of the finish mill products is handled with these two water cooling units.

Below, right:
LATEST ADDITION to the finish mill department was this 1,250-hp. 11½- by 17-ft. single-unit mill.



CEMENT STORAGE CAPACITY has been expanded quite considerably. Since about 80 percent of annual output is shipped in a 6-month period, the capacity permits rather constant production rates. The truck loading silo shown here is the latest of 33 silos added in the last ten years.

The bagging operations have not been changed since the first report on this operation. However, the newer ten-silo group provides an appreciably greater capacity in loading of bulk rail shipments. The other of the two new groups, with 12 silos, furnishes additional storage from which both the packhouse and a bulk truck-loading station can be supplied, as well as rail cars.

The truck-loading installation is comprised of a quadrant silo of 8,000-bbl. capacity, and a Fairbanks-Morse platform truck scale. Approximately one-third of all bulk shipments are handled by truck, and about half of the bagged shipments are truck loaded. Of all shipments from the plant, approximately 63 percent are in bulk, and the remainder is bagged.

Two-thirds of the total consignments are made to customers in South Dakota alone, and the products shipped include types I, Ia, II, V, and masonry cements. About 80 percent of annual output is shipped during a 6-month period. Thus, the large storage capacity available makes it possible to maintain a rather constant production rate, and to keep most of the crew on the job throughout the entire year.

**Quality Control** The consistently high product quality recorded by "Dacotah" brand cements stems in large part from careful laboratory control. Every two hours raw mill slurry is checked for moisture content and fineness, and a check is run after each filling of the slurry blending tanks.

Hourly, the finish mill product is analyzed for Blaine fineness and setting time. Once per shift clinker samples are ground, and complete analysis (through CaO) is run on a 24-hr. composite. Nine separate free lime tests are run—one for each kiln in each of the three shifts. In addition, the chemists handle normal carbonate checks on the raw materials, as well as routine physical testing.

**Plant Power** One of the basic changes made in the last few years was the discontinuance of waste-heat boiler power generation. At the time of the previous report on this plant, about one-half of the power requirements were met by waste heat boilers related to the two original kilns. All power is now purchased from an area utility.

The conversion involved the installation of a second air-cooled 3,750 kv.-a. transformer unit. To supply the various centers, there are now 14 2,300-v. distribution lines from a 69,000-v. primary station.

**Officials** Under the general supervision of the four-man South Dakota State Cement Commission, operations of the cement plant are the direct responsibility of Frank Gardner, general manager. His average crew consists of about 145 men—133 in the plant, and 12 in the quarry. Mr. Gardner's staff includes Richard D. Marquardt, assistant general manager and superintendent; Foster Shankland, sales manager; Clark Besancon, chief chemist; and Robert Glaseman, quarry superintendent.

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Four storage silos and a slurry tank will be constructed at the Foreman, Ark., plant of the Arkansas Cement Corporation, a subsidiary of Arkansas Louisiana Gas Company. The contract for the design and construction has been awarded to the Rust Engineering Company, which also built eight silos at Foreman for the firm in 1959. The new structures will be 115 ft. high and have a combined capacity of 70,000 bbl.

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Three fourth-year architectural students at the University of Virginia have won cash prizes totaling $625 in the eighth annual Solite Competition Award contest sponsored by the Solite Corporation, Richmond, Va. Robert F. Bower, Falls Church, Va., placed first in the competition. R. Caswell Cooke Jr., Richmond, and Byron R. Dickson Jr., Roanoke, were second and third.

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For the six months ended June 30, Medusa Portland Cement Company reports billings to customers, less discounts, of $15,525,000 (*vs.* $14,750,000 in 1960) and net income of $986,000 (1960 period: $1,249,000). Earned per share: $.59 compared with $.74 in 1960. The earnings decline was caused by a change in accounting procedures in handling standby charges at mills during seasonal shut-down periods.

**DOWN THIS CRAGGY 45% SLOPE** goes the 1400′ long, 13′ diameter steel and cement penstock for the new Camino Powerhouse. The first phase of the job, a part of the Upper American River Project near Sacramento, California, was handled by Western Knapp Engineering Company and included the powerhouse excavation and the penstock "slot," anchors and immediate supports.

# How low-cost air helped carve a 1400′ penstock in mountain rock

On this cliff-hanging drilling operation, a battery of Jaeger Roto Air Plus Compressors (900, 600 and 125 sizes) provided all the air power the contractor needed, and saved money every hour they worked.

**THE JAEGER "900" AND TWO "600s"** delivered full rated capacity at a fuel- and engine-saving 1700 rpm. That's 100 rpm (48,000 revolutions per 8-hour day) slower than competitive compressors that use the exact same GM 6-110 and 6-71 diesels. Naturally, diesel fuel goes further in a Jaeger (the compressors averaged over 500 cu. ft. per pound of fuel) and the engine lasts longer. It works less. For the same reason, compressor life is longer — up to 10,000 hours without a vane replacement is not unusual.

**THE BATTERY OF JAEGER "125s"** powered heavy 55 lb. sinkers with comparable efficiency, also producing more than 500 cu. ft. of air per pound of fuel at an easy 1750 rpm.

Full air pressure at slow engine speeds is one of the quality-plus characteristics of Jaeger rotaries — 75 to 900 cfm. Ask your Jaeger distributor for all the facts and figures, or write for our new compressor catalog.

**JAEGER**

**ROTO AIR PLUS**

**A "MOUNTAIN" OF AIR POWER, TOO:** In addition to the Jaeger 900 and 600 Roto Air Plus Compressors shown here, another 600 on top of the slope plus several Jaeger 125s were used for hand drilling. The "900" powered two Thor TR-5 Trac Drills.

**The JAEGER MACHINE CO., 602 Dublin Avenue, Columbus 16, Ohio**

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

*Worldwide sales and service through Jaeger International Corp., Apartado 137, Panama, R. P.*

PUMPS • TRUCK MIXERS • CONCRETE MIXERS • CONCRETE SPREADERS • FINISHERS • FINISHER-FLOATS

# N.C.S.A. Directors—

## Manufacturers Division Executive Committee Meet at White Sulphur Springs

### Zoning, group insurance, legal matters discussed; plans made for coming Chicago convention and show

By WALTER E. TRAUFFER

ANOTHER ON THE SPOT REPORT

THE board of directors of the National Crushed Stone Association held its annual summer meeting on July 13 and 14, 1961, at The Greenbrier, White Sulphur Springs, W. Va. All the officers, and all but a few of the members of the executive committee, regional vice-presidents, and directors—and several of the past presidents—were in attendance.

Many important matters of association business and many problems confronting the industry were discussed. Special attention was given to a new zoning threat, and a group insurance plan was adopted.

The executive committee of the Manufacturers Division of N.C.S.A. met on the morning of July 13. Present as guests of honor were several past chairmen of the division.

**Coming Meetings** The 1962 summer meeting of the N.C.S.A. board of directors and the executive committee of the Manufacturers Division will be held at the Grove Park Inn, Asheville, N. C., if suitable dates can be obtained in July or early in August. An invitation to hold the 1963 meeting at the Seigniory Club, Montebello, Que., where a very successful and enjoyable meeting was held in 1953, was extended by Ross G. L. Harstone (Canada Crushed Stone Co.).

The 1962 Annual Convention and Machinery Exposition is scheduled for the Conrad Hilton Hotel, Chicago, February 12 to 14—the week after the National Sand and Gravel Association and National

Some of the officers and members of the N.C.S.A. executive committee and staff. Seated, left to right, are: Charles Coburn (Waukesha Lime & Stone Co., Inc.), president; Joseph E. Gray, engineering director; D. C. Harper (Southwest Stone Co.); Wilson P. Foss (New York Trap Rock Corp.), vice-president; and J. R. Boyd (executive director of N.C.S.A.), secretary. Standing are: J. Reid Callanan (Callanan Road Improvement Co.), treasurer; Warren C. Rowe (Rowe Contracting Co.); M. E. McLean (East St. Louis Stone Co.); and Arthur Goff (Wallace Stone Co.).

Among those attending the meeting of the executive committee of the N.C.S.A. Manufacturers Division were: seated, left to right: W. E. Collins Jr. (Atlas Chemical Industries, Inc., Explosives Div.); Frank E. Briber Jr. (Allis-Chalmers Mfg. Co.); L. A. Rhodes (Stedman Foundry & Machine Co.); Darrell Smith (Joy Manufacturing Co.), chairman; Charles Coburn (Waukesha Lime & Stone Co., Inc.), representing N.C.S.A. as president; J. W. Hardesty (Baldwin-Lima-Hamilton Corp.); J. R. Boyd (executive director of N.C.S.A.), secretary. Standing are four past chairmen: L. A. Eiben (Northern Blower Div.); Wayne W. King (W. S. Tyler Co.); J. Craig McLanahan (McLanahan Corp.); and Irwin F. Deister (Deister Machine Co.). The meeting was well attended.

Ready Mixed Concrete Association will hold their combined meeting and machinery show at the new McCormick Place Exposition Center. According to Wilson P. Foss III (New York Trap Rock Corp.), chairman of the convention arrangements committee, an excellent program is assured.

The 1963 Annual Convention will again be held at The Americana, Miami Beach, Fla., January 29 through February 1.

**Executive Director** The status of the various important legal and governmental developments affecting the crushed stone industry was briefly summarized by J. R. Boyd, executive director, in his annual report to the board. The most disturbing development on percentage depletion was the primary crusher cutoff decision; and the association took prompt action against this decision, culminating in the filing of a brief with the Internal Revenue Service.

In May the situation in Congress with regard to common situs secondary boycotts reached a point at which it seemed desirable for N.C.S.A. to file a statement opposing any legislation which would legalize such boycotts. The possibility of action on such legislation at this session of Congress seems very remote, said Mr. Boyd, but the issue may be revived in the next session. He urged all members to inform their congressmen of the harmful effects such legislation would have on business.

When the Federal-Aid Highway Act of 1961 recently became law, much of the uncertainty as to the volume of highway construction in the years ahead was removed. States can now plan on a long-range basis, and a steady and increased demand for aggregates can be expected.

Mr. Boyd also reported increased participation in the N.C.S.A. safety contest. A final complete report is not yet available for 1960, but it is known that 65 plants completed the year without a disabling work injury, as compared with 57 for 1959.

**Engineering Director** In his report, Joseph E. Gray, engineering director of N.C.S.A., described the work done in the laboratory for the last six months. Service testing for member companies occupied about 40 percent of the time of the laboratory staff, and 60 percent was spent on research.

The service testing done included very little routine testing for compliance with specifications. It consisted mainly of evaluation studies very helpful to members. Included were sulphate soundness tests, often followed up with durability studies for better indication of the performance of the aggregate in concrete. In one case the tests showed that eliminating certain ledges by benching was necessary, even if it was expensive. In another case a member wanted to market a crushed conglomerate sand, according to Mr. Gray, but needed proof that it would make a satisfactory fine aggregate.

There has been considerable demand from members for evaluation studies on base course material in order to ensure satisfactory performance. The best promotion in this growing market, said Mr. Gray, is to have a first-class job. Bituminous mix designs were also developed for aggregates with widely different characteristics.

The research done was mostly applied research on the use of crushed stone through the development of better methods of test, better specifications, and improved methods of construction. Such research data, Mr. Gray said, is very effective when taken to a state highway department; and research done in direct co-operation with such a department is the ultimate in advancing the position of crushed stone. Co-operative studies were made with five departments, involving an experimental road for testing the performance of various types

At the cocktail party: Horace C. Krause (Columbia Quarry Co.); Donald Shepherd (Donald Shepherd & Co., group insurance consultants); A. W. McThenia (Acme Limestone Co.); Theodore C. Cook (Lynn Sand & Stone Co.); and Warren C. Rowe (Rowe Contracting Co.).

of base course construction, the making of a California Bearing Ratio test on a troublesome material, a study of the allowable amount of dust for macadam, and two tests of slipperiness in bituminous mixes.

Mr. Gray also described three research projects under way—on concrete durability, stone sand in air-entrained concrete, and shape of particle tests on trickling filter media. The other activities peculiar to his job were also described.

**Zoning** It was decided that N.C.S.A. should participate in the *Goldblatt* v. *Hempstead* (Long Island) zoning case if the Supreme Court will permit it. According to John R. Lane, association counsel, the Court has not accepted a zoning or similar case for some years. This, he said, is an opportunity to get the viewpoint of the crushed stone industry before the Court. The case is a menace to all producers and must be won.

In this case a sand and gravel producer in Hempstead, L. I., has been operating in one location for 40 years. In the 40's the town tried to oust him and failed, but it did require him to fence and beautify his property. Recently an ordinance was amended to prohibit excavation, and he was ordered to fill in the pit. This would cost him about $1,000,000, and a fine of $500 per week was imposed for non-compliance. The case was taken through all the New York courts, and the prior nonconforming use basis was vacated. The decision was based on the premise that the pit is a menace to health and safety.

**Depreciation—Depletion** Depreciation developments in recent months have changed the picture considerably, according to Mr. Lane. President Kennedy's proposal to allow every taxpayer 8 percent credit against his tax bill for what he has spent or committed for new machinery in the tax year is not popular; but industry is for it as it may be the last chance to get anything from this session of Congress. It is a step toward tax relief and an incentive to keep business modernized.

The percentage depletion trend is not good, said Mr. Lane, especially the Cannelton decision on cutoff at the primary crusher. N.C.S.A. filed a protest, together with the American Mining Congress, and got a hearing at which much evidence was presented to show the unfairness of this decision. Some action is expected soon.

According to Mr. Lane, the N.C.S.A. Federal Labor Standards guide book is now ready for printing. This publication will include important information on 17 standards which may be applicable to the crushed stone industry. The four major statutes in this group are: the Federal Wage-Hour Law of 1939; the Walsh-Healy Public Contracts Act; the Bacon-Davis Act on federal construction; and the 8-hour laws. Included will be a chart which will help a producer to analyze his business with respect to the jobs he is engaged in and to define his problem area.

**Group Insurance** A brief description of various group insurance plans was given by J. V. Owens (Eastern Rock Products), who introduced Donald Shepherd, Donald Shepherd & Co., consultants. Mr. Shepherd told of his experiences with such plans for N.S.G.A. and N.R.M.C.A. These associations now have 160 participating companies, 40 of which joined at least partly because of the insurance plans. The National Industrial Sand Association and the National Concrete Masonry Association are now also participating.

Under such a group plan, he said, the gross cost is lower, but each producer can get adjustments made to his own conditions and desires. Low-cost insurance is also made available to the small producer in this manner, and the unions are kept out of this field. The board voted to have a committee promote this plan and get commitments from members on a preliminary insurance feature.

**Manufacturers Division** The meeting of the executive committee of the Manufacturers Division was well attended, with all but one of the

members present. Those attending were: Darrel Smith (Joy Manufacturing Co.), chairman; L. A. Rhodes (Stedman Foundry & Machine Co., Inc.); Frank E. Briber Jr. (Allis-Chalmers Mfg. Co.); J. W. Hardesty (Baldwin-Lima-Hamilton Corp.); and W. E. Collins Jr. (Atlas Chemical Industries, Inc., Explosives Division), past chairman. Charles Coburn (Waukesha Lime & Stone Co.), N.C.S.A. president, represented the association. Also present were J. R. Boyd and Beatrice Gay of the N.C.S.A. staff.

Present as honored guests were the following past chairmen: L. A. Eiben (Northern Blower Division); Wayne W. King (W. S. Tyler Co.); J. Craig McLanahan (McLanahan Corp.); and Irwin F. Deister (Deister Machine Co.)

In brief reports Chairman Smith and Secretary Boyd gave information on the machinery exposition to be held in connection with the coming N.C.S.A. annual convention in Chicago in February. There will be no increase in booth space cost, and space will be assigned late in September. The descriptive circular and application form for space at the exposition will be mailed out soon.

The membership of the division has totaled 119 for the last year, and it is believed that all available space will be sold out, as it was in 1958 and 1960.

The feeling was expressed that the daily social hour at this convention should be better publicized since it gives unequalled opportunity for producers and manufacturers to get acquainted, for their mutual benefit.

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### Gypsum and Gypsum Products Decline 10 Percent in 1960

Gypsum production declined somewhat from the high rate established in 1959, according to producers' reports released to the United States Bureau of Mines. Domestic mines produced 9.8 million short tons of gypsum in 1960, a decrease of about 10 percent from the record output of 1959. Average value was $3.63 per short ton, compared with $3.60 in 1959.

Output was lower in each of the four quarters of 1960 than in the corresponding quarters of 1959, but followed the previous year's production-rate pattern by beginning low in the first quarter, increasing through the third quarter, when it was greatest, and then declining in the fourth quarter. The 69 mines operating in 21 states comprised 53 open-pit and 16 underground. Over half of the gypsum mined in Iowa and Texas and about one-third of that mined in Michigan was calcined, whereas over half of California's crude gypsum output was used for agricultural purposes.

Sixty-one plants with 277 kettles and other pieces of calcining equipment calcined gypsum from domestic and imported ores. The 8.6 million tons of calcined gypsum, valued at $121 million, produced in 1960 was 7 percent below the 1959 output.

Imports of crude gypsum decreased 13 percent—from 6.1 million tons in 1959 to 5.3 million tons in 1960. Canada provided 28 percent of the total U.S. supply.

Most of the U. S. apparent supply (15.1 million tons) in 1960 was calcined, but 3.7 million tons, or almost 25 percent, was used uncalcined as portland cement retarder and agricultural gypsum. The average value per ton of portland cement retarder was $4.42 and that of agricultural gypsum $3.29.

Of the calcined products, industrial plasters decreased 9 percent in volume and 2 percent in average value. Sales of building plasters and of prefabricated products showed declines of 11 and 7 percent, respectively, in tonnage but rises of 1 percent in average value per ton.

Gypsum building products consumed, particularly the relatively high-value prefabricated materials, closely followed the pattern established by residential construction. The physical volume of construction activity measured in constant dollars dropped 4 percent in 1960, twice as much as in current dollars. The greater drop was due to a slight rise in construction costs between 1959 and 1960.

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For the year ended May 31, 1961, Southern Materials Company, Inc., reports sales (less discounts and freight out) of $19,667,647 (*vs.* $19,171,292 in fiscal 1960) and net income of $1,043,730 (1960: $1,131,873).

### Domestic Ball Clay Output Decreases 6 Percent in 1960

Domestic output of ball clay sold or used by producers decreased 6 percent in tonnage and 7 percent in value, compared with 1959, according to reports from producers to the United States Bureau of Mines. Total output was 444,369 short tons.

Tennessee continued to be the major producer, accounting for 64 percent of the U. S. total tonnage and value (the same as in 1959); Kentucky was second. Other producing states were California, Maryland, and Mississippi.

The pottery industry, with a 10 percent decrease from 1959, consumed 56 percent of the ball clay produced in 1960, compared with 58 percent in 1959, and 67 percent in 1955. Other consumption figures for 1960 were: floor and wall tile, 22 percent (down 12 percent); and refractories, 15 percent (down 2 percent).

Imports of common-blue clay and ball clay decreased 29 percent in tonnage and 28 percent in value, compared with 1959. Most imports came from the United Kingdom, with minor quantities from Canada.

In 1960 the average value per short ton for ball clay as reported by producers was $13.45, compared with $13.59 in 1959, and $13.10 in 1955.

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For Johns-Manville Corporation, sales for the six months ended June 30 dropped from the 1960 total of $174,326,000 to $173,076,000, despite an increase in the second quarter.

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Sales of $34,109,125 and net income of $1,437,908 (24 cents per share) were reported for American Cement Corporation for the six-month period ended June 30, 1961. For the comparable six months last year, sales amounted to $34,778,-714 and net earnings to $1,847,044 (37 cents per share).

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Western Gypsum Products Ltd., Winnipeg, has acquired more than 90 percent of the common shares of Perlite Industries Ltd., Vancouver, B. C., manufacturer of expanded perlite and vermiculite (lightweight aggregates).

# URBANIZATION:

## IMPETUS AND DETRIMENT TO THE MINERALS INDUSTRY

**The accompanying article by Mr. Goldman is reprinted through the courtesy of *Mining Engineering* magazine. It is one of a group of discussions stimulated by the pending Senate Bill 174, "A National Wilderness Preservation System"—legislation which proposes to withdraw over 50,000,000 acres of public lands for restricted use. Digests of those discussions immediately follow Mr. Goldman's article. A number of articles have appeared in past issues of PIT AND QUARRY dealing with the critical matter of zoning and related restrictions. The accompanying material presents another perspective which a large number of our readers will undoubtedly find of considerable interest.**

**By HAROLD B. GOLDMAN**
Mining Geologist
California Division of Mines

THIS nation's explosive population growth rate of 2½ million persons annually will make increasing demands for new roads, homes, stores, churches, theaters, hospitals, and industrial and municipal facilities. These requirements have given an impetus to the production of construction raw materials; and today, tremendous tonnages of sand, gravel, crushed stone, limestone, cement, and gypsum are being consumed each year.

Despite the dependency of metropolitan growth on these raw materials, urban expansion often works to the detriment of the production of the basic minerals. As a community expands, raw materials such as clay for brick, crushed rock for roads, and sand and gravel for concrete are needed, and the industries that produce such products are encouraged. Since these are low-cost commodities, the mining operations use suitable deposits as close as possible to the consuming areas, that is, the population centers.

However, once the community is established and begins to grow, it gradually encroaches upon these previously established operations, and the mining operator suddenly finds himself inside the city limits and subject to city ordinances. The new residents in the immediate vicinity of the pit or quarry consider it a nuisance and resent the hazard of trucks, the noise and dust, and the unsightly excavation. Pressure is brought to bear on the civic leaders to restrict the operation through various ordinances such as load and speed limits on trucks, restricted hauling routes, limited hours of operation, and dust control. Blasting becomes more and more restrictive and ultimately the only alternative is to shut down his operation and move to a deposit farther away and outside the city limits.

In former years, it was possible to find other sources of clay, rock, sand and gravel still within easy and economical hauling distances, and the only inconvenience and expense incurred by the operator was in moving. *This is not the case today.* The easily accessible deposits in most instances have been depleted, zoned out of existence, or submerged by urban expansion. The old idea that stone, sand and gravel can be found anywhere is no longer true.

Raw materials are now imported from deposits situated as far as 50 miles from the larger metropolitan consuming areas. The added transportation cost must be passed on to the consumer and for large scale municipal projects requiring great tonnages of construction raw materials, this cost becomes very significant to the taxpayer.

Absorbing transportation costs is not the only way in which urban citizens lose. Often the new deposits being worked at a great distance from the consuming center are of inferior quality when compared to the original source; yet they must be utilized because the expense of importing higher quality material from a more distant source would be prohibitive. Thus the quality of construction may suffer and maintenance costs may rise.

Each decade urban settlement extends over an additional 15,000 sq. miles in and around our metropolitan complexes. The President's Materials Policy Commission estimated in 1952 that 15 million acres of farm land would be taken by the growth of cities, roads, and airports from 1950 to 1975. It seems probable that the urbanized areas will increase from the 16½ million acres in 1950 to between 30 and 40 million acres in 1980.

Already many valuable mineral deposits have been submerged in the

wake of urban expansion. For example, in San Diego County, California, an excellent molding sand used in aluminum and brass casting came from a pit which had to be abandoned several years ago because of an encroaching housing development. This same type of sand underlies a large part of the City of San Diego, and although it is an excellent material for making castings, it is not likely that further deposits will be opened up within the city limits.

Similarly, other significant examples were the closing of a diatomite quarry, cessation of a salt works, closing of brick plants, abandonment of rock quarries that had been active for 20 to 30 years, and closing of a cement plant and a pyrite mine.

Besides these deposits which are now engulfed, other deposits, located at a distance from a city but ringed by smaller population centers, cannot be exploited because of the difficulty of haulage through these communities.

This situation is best exemplified in the Peninsula area of Northern California, where high-quality rock occurs in the hills bordering San Francisco Bay. Quarries cannot be opened because the only access roads down from the hills go through the numerous small cities which have been built up on the flanks of the hills.

### How Planning Can Help

There is little reason to doubt that judicious planning can result in wise land use and conservation of our mineral resources. The diverse uses of land for agriculture, recreation, residential and industrial urban development, and mining can be integrated with enough foresight and determination to serve everyone's purposes.

For example, a rich deposit of mercury ore which had been known to exist but never fully exploited was uncovered during the grading for a housing development in Redwood City, Calif. Permission was granted by the city to mine the ore, and a substantial quantity of mercury was ultimately recovered. When the mining operation was terminated, the land was filled in and regraded and the homes were built.

Integration of purposes and planned conservation during mining operations can also be made to pay off both financially and in good will.

An extensive quarry operation that provided about 5 million cu. yd. of fill for the San Francisco airport is now the site of hundreds of homes.

In Los Angeles the Great Lakes Carbon Corporation is integrating a dimension stone operation with a real estate development. As the stone is removed, the land will be leveled for choice home sites.

In the Midwest a progressive crushed stone company demonstrated that quarrying can be turned to the community's advantage by flooding the pit to form a lake and then surrounding it with trees and shrubs.

### Summary

Long-range planning can help conserve our mineral deposits for future exploitation, but the co-operation of planning bodies, civic officials, and mineral producers is essential for a properly integrated program.

City planning bodies must be acquainted with the idea of reserving mineral lands. While the need for preserving other natural resources is recognized by progressive planners, the idea of preserving mineral lands is new. Land can be maintained as recreation or wildlife preserves, or used for such activities as farming, lumbering, or grazing until the need for the underlying mineral becomes more and more pressing.

Civic officials must give consideration to the needs of the community for raw materials and to the redevelopment of the land after the deposit has been mined out. By setting aside future reserves, the community can be assured of a supply of local raw materials at low cost. It is the obligation of the civic leaders to apprise themselves of the mineral wealth within their jurisdiction and carefully consider the additional cost to the community that would result from permitting their local sources of raw materials to be submerged by the expansion of the city.

Perhaps a concluding example can best summarize what local government can do to handle the needs of a rapidly growing area. The City of Los Angeles recognized the problem of losing mineral lands to urbanization and has attempted to integrate some of its mineral deposits with the over-all expansion program before these deposits are overrun by homes.

Consulting engineers, employed to study the sand and gravel resources in the San Fernando Valley, outlined usable deposits which were subsequently set aside and zoned for mining. Designation of these sites has delayed urban encroachment until the deposits have been depleted. When this time comes, the pits will become refuse disposal areas, then filled in again and restored for urban use.

*Other specialists in land use discuss current problems.*

**A recent release issued by the Society of Mining Engineers of A.I.M.E. contains digests of discussions, along with the material presented above, by authorities in the fields of interest involved with the land use problem. The discussions are considered pertinent in view of the pending legislation, and because, as the society notes, efficient land use is favored by all, but it spurs controversy on the particulars in its attainment. Significant points brought out in these discussions follow:**

An article by Hollis M. Dole, director of the Oregon State Department of Geology and Mineral Industries, states that the population increase requires more minerals production but also more land for recreation.

"Conflicts arising from withdrawal of lands could be reduced," Mr. Dole points out, "if multiple use were recognized as including any use of the land as long as it was in accord with other uses."

Withdrawals were described as a threat to the continuation of mining. Although certain types of withdrawals are necessary, constant alertness

(*Concluded on page* 112)

*No. 1 in a series of announcements on new* HOUGH *machines*

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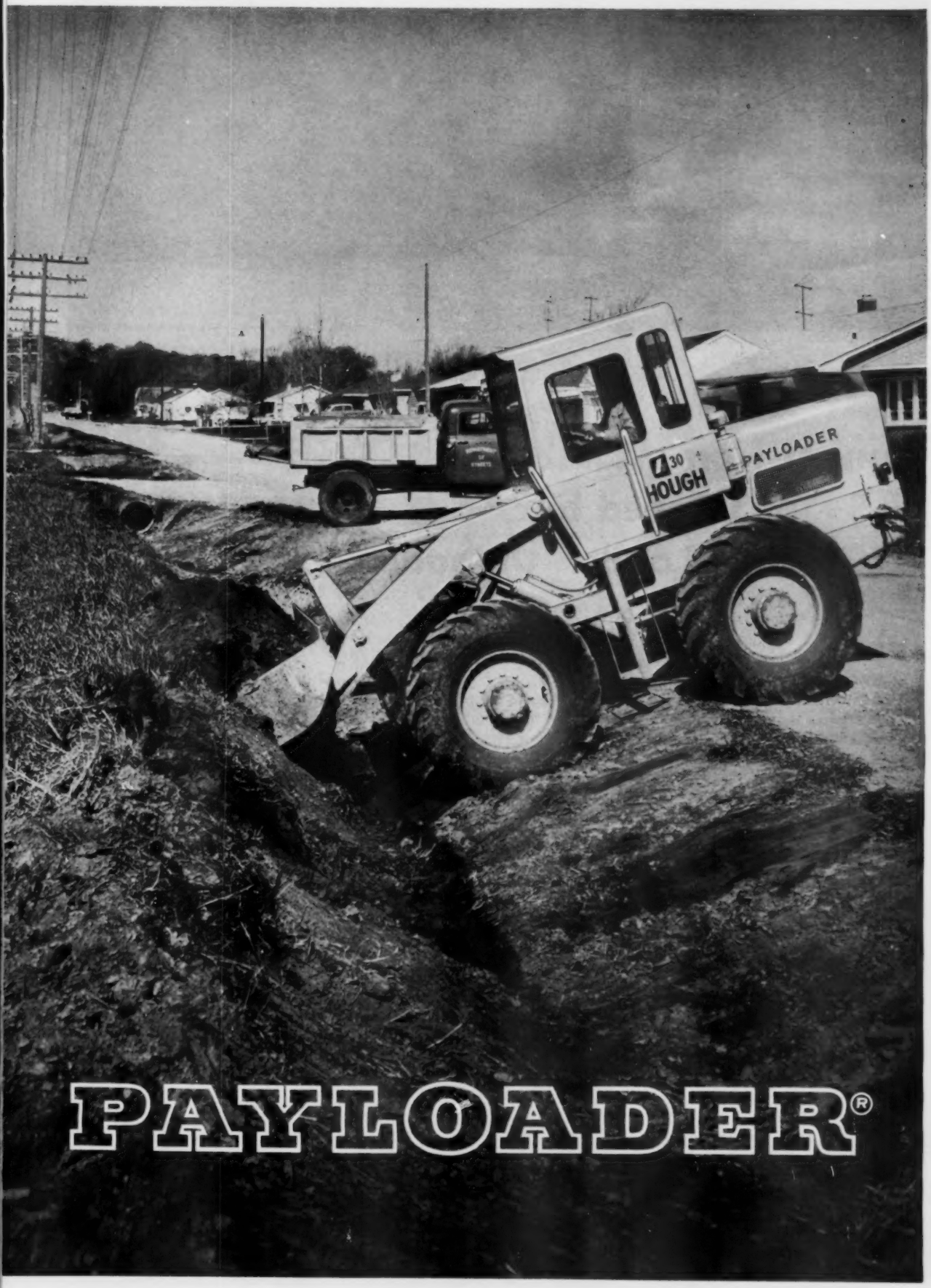
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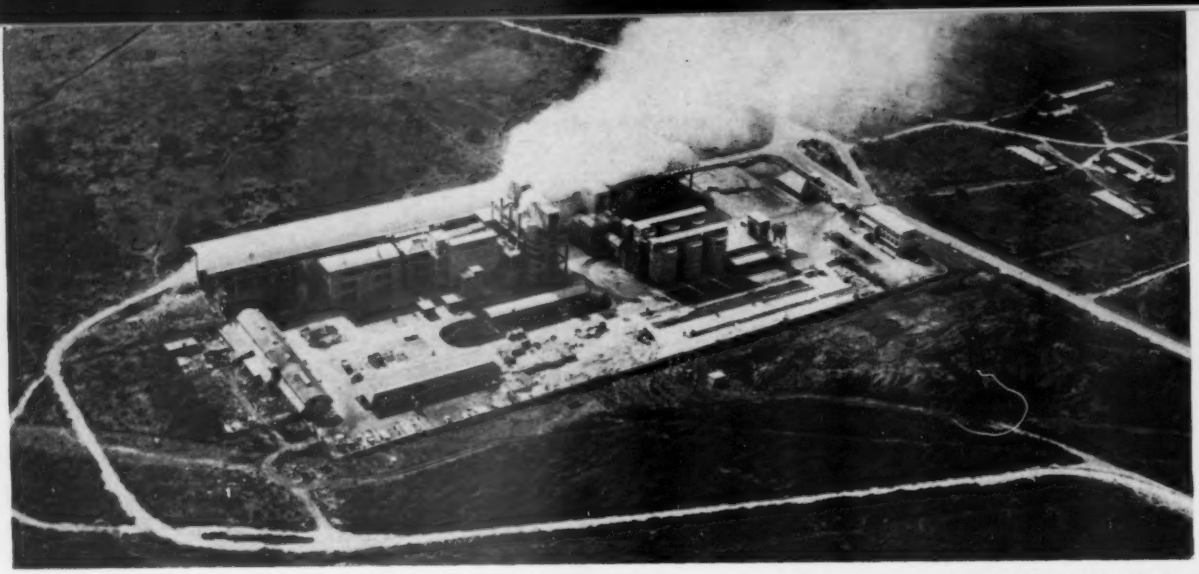


An aerial view of the Bumburi (Kenya) cement plant, operated by the British Standard Cement Company. This installation, one of two in Kenya, lies a few miles north of Mombasa, and is rapidly expanding its export trade.

# Cement from Mombasa Shipped by Self-Loader-Unloader

MOMBASA-MADE cement gained the distinction of being the first in East Africa to be exported by sea in bulk when the *Southern Baobab*, the latest addition to a Kenya shipping company's fleet (Southern Line Ltd.), carried 2,400 tons of cement to Dar es Salaam, the Tanganyika capital.

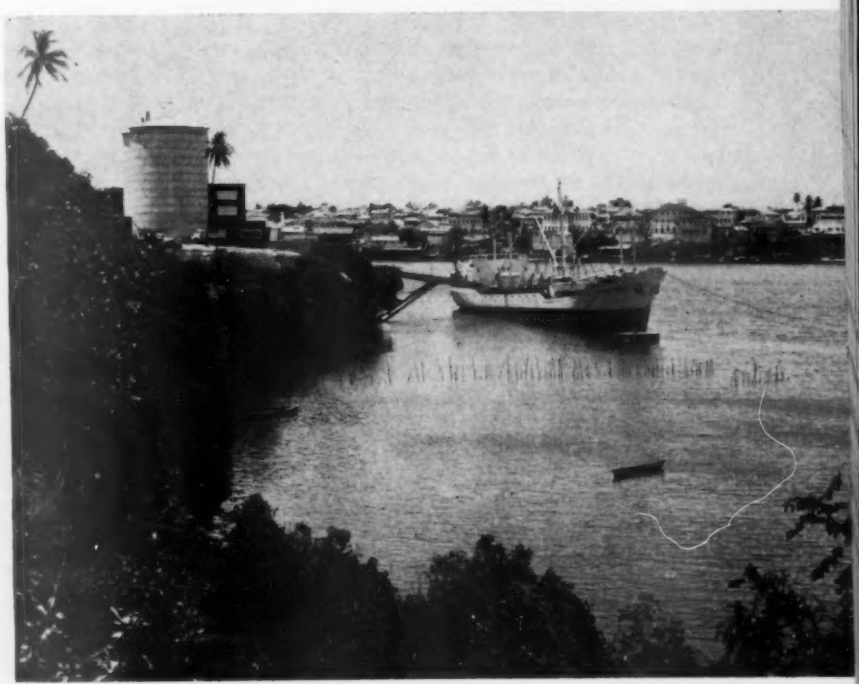
The cement cargo was taken on by the vessel at the new 5,000-ton cement storage silos at English Point, in Mombasa's historic Old Harbour. These silos were installed to facilitate cement shipping from the Bumburi cement factory, which is operated by the British Standard Portland Cement Company, Ltd.

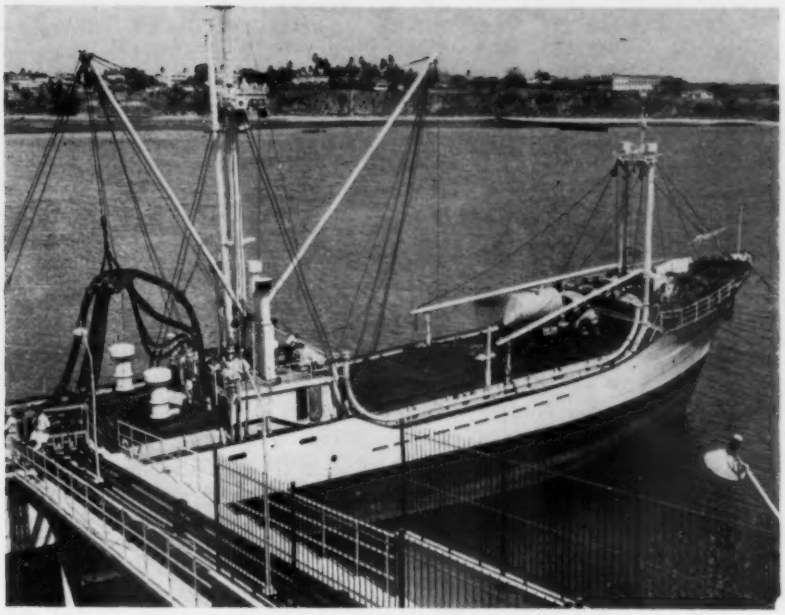
This joint enterprise of the two companies represents new capital investment of more than £500,000. The three bulk-handling installations at Mombasa, Dar es Salaam, and Port Louis in Mauritius have cost the cement company approximately £300,000. The cost and conversion of the *Southern Baobab* into a cement-carrying ship was about £250,000.

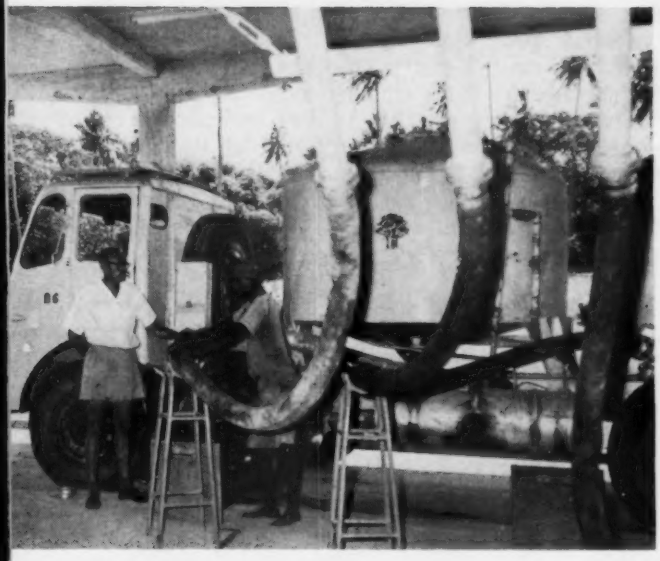
With the completion of this new project, the cement company's total capital investment has reached £2,000,000. Production of cement from the Bumburi plant began early in 1954, and by the end of last year 1,000,000 tons of cement had been dispatched, most of it exported outside Kenya.

Five kilns are in operation, and a sixth will be installed this year, bringing production capacity to 400,000

The "Southern Baobab," flagship of the Southern Shipping Line, moored alongside the new cement silos on the mainland opposite Mombasa's Old Harbour.







Above: The "Southern Baobab" being loaded with 2,400 tons of bulk cement at English Point, Mombasa, from the new silos. The cement is pumped into the ship's hold by means of compressed air.

Left: A bulk cement transporter of bulk cement being unloaded at English Point. The transporter, with trailer, carries 20 tons of cement and can be discharged into the silos in 20 minutes —one ton a minute.

tons per year. This plant supplies practically the whole of Tanganyika's cement requirements and also exports cement to Mauritius, Reunion, the Malagasy Republic, Mogadishu, Berbera, the Aden Protectorate, and various ports in the Persian Gulf. In addition, inquiries have been received from Ghana, Nigeria, Panama, and Australia.

The *Southern Baobab* (1,599 gross tons) now the flagship of the line, is equipped entirely with pneumatic loading and unloading machinery. Her complete unloading system is connected with a system of interlocks, so that if one of the pumps, blowers, compressors, or air filters should become inoperative, the remaining equipment is automatically shut off. The ship's installations include 30 tons of copper cable to drive the motors, cut-outs and all the electrical equipment, besides seven miles of air piping of all types.

After initial troubles have been overcome, the ship will be able to take on a full cargo of cement in about 8 hours—a task which would take about three days if it were loaded manually and in bags. The cement is pumped by compressed air from silo to ship and unloaded into silos on arrival at Dar es Salaam and Mauritius. No nuisance is caused by cement dust, as the cement is loaded and unloaded by means of airtight hoses and pipes, and the silos and the ship's hatches are completely sealed.

It is expected that the *Southern Baobab* will transport 110,000 tons of cement a year—65,000 tons to Dar es Salaam and 45,000 to Mauritius. The ship was originally built at Hamburg in 1952 and was under conversion there for some months under the supervision of R. E. Bainbridge, the joint managing director of the company which owns her and five other ships.

Commanded by Captain A. F. Martin, M.B.E., the 286-ft. long vessel can cruise at 12 knots, and is fitted with most modern equipment. She derives the name *Baobab* from the cement company's trade mark, a baobab tree, the original of which is on the factory grounds at Bumburi, on the coast just north of Mombasa.

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### Two Distributing Plants Added to Marquette Setup

Construction has begun on the Marquette Cement Manufacturing Company's major distribution plant at Waukegan, Ill. The sub-structure for the storage silos is being placed. The facility will consist of a bank of three 143-ft. silos having a total cement capacity of 62,000 bbl. and a packing plant with equipment for rapid loading of both packaged and bulk cement. A duplicate bank of silos will be added later, to bring the capacity to 124,000 bbl.

Contracts have been let for the construction of another distributing plant, in the harbor of Providence, R. I. Products of Marquette's sales subsidiary, North American Cement Corporation, will be trucked in from Catskill, N. Y. This plant will also have three 143-ft. silos, with a total cement capacity of 62,000 bbl., and packing and unloading - loading equipment.

# *Effective Separating Size for* ***Free Crushing*** *in Tube Mills*

By TATSUO TANAKA
Kanazawa, Japan
Department of Chemical Engineering
Kanazawa University

## INTRODUCTION

FREE crushing is defined as a process wherein the finer particles produced in a tube mill are instantaneously removed from the system in order to avoid overcrushing. Overcrushing is unfavorable because it leads to coating of the grinding media or of the surface of the liner, so that the impact energy will be reduced considerably due to cushioning.

The air-swept mill is a typical application of the process which is called free crushing. As far as the writer knows, however, there have been no definite conclusions about which particle size is the most appropriate separating size for the purpose of getting the best over-all efficiency in crushing and grinding.

It has been supposed that the finer the particles, the harder the crushing. However, if one adopts a separating size which is coarser, the over-all efficiency, which is expressed by the increase of the surface area per unit energy, is not always larger, because one has to also consider the fineness of particles which are removed from the system.

There must be the most efficient particle size from the viewpoint of energy efficiency, depending upon the crushing condition. Of course, one has to take into account the fineness properties of the finished product at first. However, the crushing condition should be adjusted as effectively as possible, by having such a requirement in mind.

## ABOUT THE AUTHOR

■ The accompanying article is based on extensive studies and experiments conducted by the author, who is well known internationally in the technical field he discusses. Although the article reports work on grinding of silica sand, this material was chosen for the experiments because, according to the author, "the grinding tendency of silica sand can be considered to be most basic for all kinds of materials since it is the simplest and has less complex secondary effect due to grinding." Several years ago Mr. Tanaka made experiments on ball mill grinding of several materials, including limestone, silica sand, ganister, and cement clinker. It was found that the size distributions of finished products of silica sand and cement clinker were quite similar. Therefore the author feels that the empirical equation presented here on silica sand can be safely extended as it is with respect to clinker grinding. As an alternative, he suggests a cut-off size slightly smaller than would be derived by the equation.

Mr. Tanaka believes that the present equation is applicable to most brittle materials, but is suspect in application to very soft or plastic materials or materials having irregular size distribution in terms of Rosin-Rammler or Gaudin-Schumann law.

With respect to application of the results of this study to size of operating equipment, the most appropriate air velocity for an air swept mill, from the standpoint of terminal velocity, can be calculated by using a cut-off size estimated from the equation. At any rate, Mr. Tanaka indicates, by taking into consideration the cut-off size value, "we can arrange the milling condition most efficiently corresponding to the specified mill size and ball size which should be determined by other conditions such as rate of production, fineness of product, etc."

This paper has as its purpose the development of basic knowledge on the most efficient separating size under various conditions; and the empirical equation proposed here must be applicable to the industrial design. This study was also planned to be one of a series of basic studies on the closed-circuit grinding system.

## BASIC EXPERIMENTS

*Apparatus*—In order to obtain practical data, or at least to obtain the data which are supposed to be applicable to practical mill design, a crushing device with a spring-gunlock system was used. This device was very small, but the energy produced by the drop weight was as much as that which was produced in a tube mill of industrial size. The apparatus, as shown in Figure 1, consists of a mortar, a piston and spring supported by the gunlock, a hammer, and a falling ball, which is supported by friction produced between the ball and a ring having the same diameter as the ball. The numbers shown in Figure 1 are expressed in millimeters. The crushing energy can be adjusted by changing the location of the piston with the aid of the spring and gunlock. All the units are connected with each other and also the mortar and are fixed on a horizontal base made of concrete.

For the definite condition, that is, a constant energy level and a constant ball size (made of steel), ten series of tests were performed by using 1 gram of the sample at each time. The material used was silica sand. The samples taken after the experiments were accumulated and mixed and then were subjected to the sieve analysis. Based on the sieve analysis, the specific surface of crushed material can be calculated from

$$S = 6\,\phi \sum (w_i/d_i)$$

where $\phi$ is the shape factor, S is the specific surface in $cm^2/cm^3$, $w_i$ the weight fraction on a certain sieve, and $d_i$ the arithmetic mean size.

The impact energy of a single drop of a falling ball is calculated as follows: From the energy balance

$$F^{\lambda}/2 + M^{\lambda} g = MV_1^2/2$$

where F is the force of the spring, $\lambda$ the expansion of the spring, M the mass of piston, g the gravity acceleration and $V_1$ the velocity of the piston just before the collision with the hammer. Therefore,

$$V_1 = \sqrt{(F^{\lambda} + 2M^{\lambda} g)/M} \qquad (1)$$

Then the piston collides with the hammer, which in turn collides with a ball, transferring its kinetic energy. Consequently from the conservation of momentum

$$MV_1 = MV_2 + mv + m'v'$$

where $V_2$ is the velocity of the piston after the collision, m and m′ the mass of ball and hammer, and v, v′ the velocity of ball and hammer, respectively. Assuming v=v′, then

$$MV_1 = MV_2 + (m+m')v$$

Substituting $r = (v - V_2)/V_1$, which is a coefficient of restitution and is taken to be 0.55, then

$$v = \frac{(1+r)\,V_1}{1 + \dfrac{(m+m')}{M}} \qquad (2)$$

Combining equation (1) and (2), one can calculate the impact energy produced by a falling ball as follows:

$$E = (\tfrac{1}{2}mv^2 + mgh)/g_c \qquad (3)$$

where h is the falling height and $g_c$ is the gravitational conversion factor.

(*Turn page*)

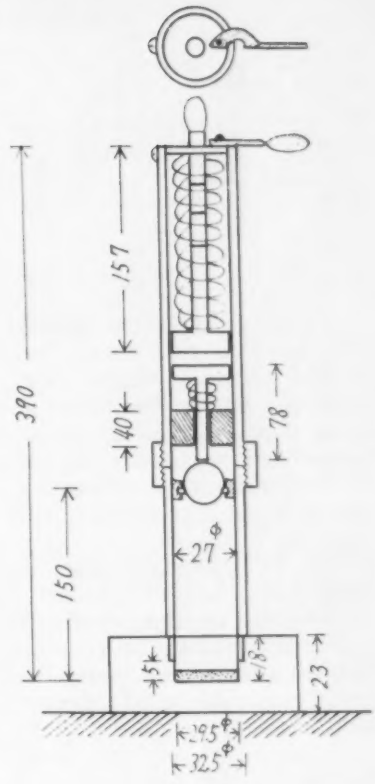
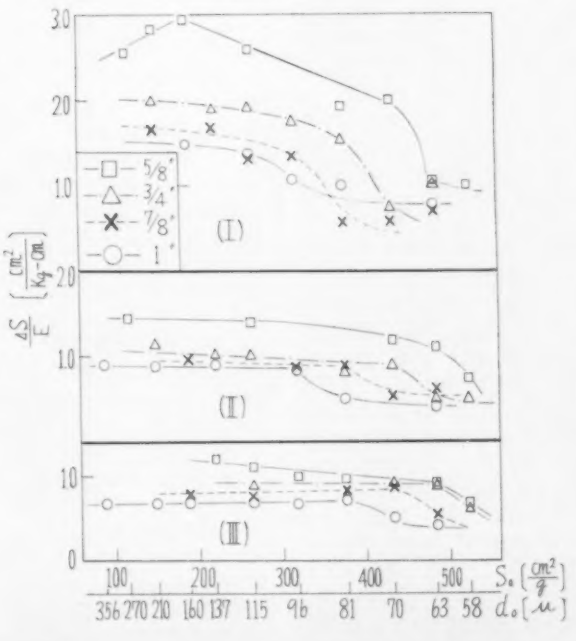



Figure 1

Figure 2



**Spring-Shock and Free Falling Tests**

| Steel ball diameter (inch) | | 1 | | | 7/8 | | | 3/4 | |
|---|---|---|---|---|---|---|---|---|---|
| Average particle size (micron) | 115 | 96 | 81 | 96 | 81 | 70 | 81 | 70 | 63 |
| Energy level, kg.-cm. | 2.56 | 5.35 | 8.5 | 1.9 | 4.2 | 6.4 | 1.3 | 2.9 | 4.5 |
| Specific surface increase om.²/g. Spring-shock | 3.5 | 4.4 | 5.9 | 2.5 | 3.8 | 5.3 | 2.0 | 2.8 | 3.9 |
| Specific surface increase om.²/g. Free-falling | 3.7 | 4.1 | 6.3 | 2.4 | 4.1 | 5.6 | 1.8 | 2.8 | 3.6 |

In order to check this equation, some empirical confirmations were made in such a way that the spring-shock test and the free falling test at the same energy level were performed, and the surface increases for both cases were compared as shown in the accompanying table at the top of this page.

Only for this confirmation, the higher falling heights were used so as to equalize the energy level. As is seen in the table, the values for both cases at the same energy level are in reasonably good agreement with each other.

Therefore, it has been proved that the equation derived above is suitable for evaluating the crushing energy produced in the device used, which is so small and yet whose energy level is as big as is produced in a mill of industrial scale.

*Experimental results*—The ratios of the specific surface increase to the energy dissipated for crushing were plotted against the initial particle size of the sample, as illustrated in Figure 2. Generally speaking, the ratio should be independent of the initial particle size, so long as Rittinger's law is valid.

As is seen, the energy-surface ratio is almost constant over the ranges, but at a certain point the ratio suddenly decreases to reach another constant value. Namely, it it considered that at such a particle size the crushing resistance becomes appreciably large, so that the crushing efficiency may be reduced. Consequently, it may well be considered that the values of initial particle size $d_0$ or $S_0$ at which the curve suddenly starts to decrease is regarded as the most efficient separating size for free crushing.

In this figure, (I), (II), and (III) denote the different energy levels. Therefore, the separating size stated above is obviously dependent on the energy level and the ball size. Since the energy level involves the ball size, the corresponding value of falling height can be recalculated in order to apply to the actual tube mill.

Figure 3 shows the relationship between the most efficient separating size $d_c$ and the ball size $D_B$ for the falling height H, which leads to the following empirical equation, as shown in Figure 4:

$$d_c = 0.014\ H^{-0.25}\ D_B^{\ 0.75} \quad (4)$$

where all the units are expressed in centimeters. In an actual case, the falling height can roughly be replaced by the diameter of the mill. According to this equation, $d_c$ can be represented in terms of the mill diameter $D_M$ and the ball size $D_B$, Figure 5, which might be of use for design and operation purposes.

## BALL MILL EXPERIMENTS

In order to confirm the empirical relationship obtained in the foregoing, model experiments were made with a ball mill of small size. In an actual case—for example, in a tube mill of air-swept type—it is very hard, even impossible, to remove completely the particles finer than the separating size from the system. This is also the case with a model mill, since the perfect classification of finer particles is very difficult.

In this paper, however, it is the purpose to verify the fundamental concept of free crushing in a crushing device which is operated at an ideal condition. Therefore, during the tests one has to bear in mind that the particles smaller than the separating size should be instantaneously removed from the system

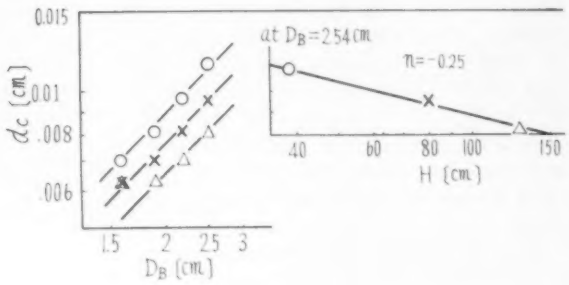



Figure 3

Figure 5 →

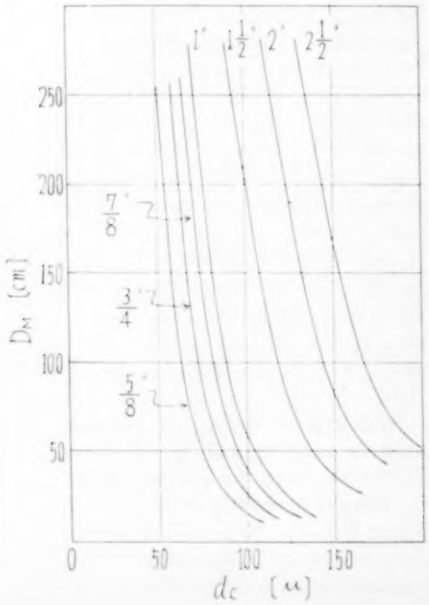
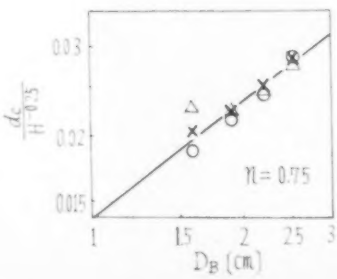



Figure 4



as thoroughly as possible.

Actually, this condition is impossible to attain experimentally, but the extrapolation method stated below (see Figure 6), would be one of the better ways to fulfill such a requirement. That is, by changing the time interval during the period of ball mill operation *e.g.*, 10, 5, and 2 minutes, and the alternate crushing and sieving at a definite time interval $\Delta\theta$, say 10 minutes, the undersize fractions of the separating size are removed, and then the further crushing is continued for another time interval, 10 minutes.

The specific surface of over-all product, including the removed materials, were calculated by (reference to) the sieve analysis. This time interval should be kept constant during the whole test. By extrapolating the data for the different time intervals to the time interval $\Delta\theta$=0, one can estimate the value which should be obtainable only when finer particles produced would instantaneously be taken out of the system.

*Apparatus*—The ball mill, 155 mm. inside diameter and 300 mm. long, was driven by a d.c. shunt motor at a constant speed of 80 r. p. m. Seven kg. of ¾-in. steel balls were charged into the mill, and 1 kg. of silica sand of 16-24 mesh Tyler sieve was the material for the batch operation. As described above, $\Delta\theta$ was kept constant throughout the experimental runs, and after the time interval $\Delta\theta$, for example 2 minutes, all the charge was taken out, ten grams of the charge was taken as a sample, and the rest was subjected to sieving; the undersize fraction on a definite separating size, *e.g.*, $d_c$=100-mesh, was removed from the mill.

The oversize fraction was charged into the mill again, and the crushing test was continued for another time interval. In order to evaluate the ideal free crushing condition, $\Delta\theta$ was changed to be 5 minutes and 10 minutes, and then the values of $d_c$ were also varied to be 150-mesh and 200-mesh.

*Experimental results*—The over-all specific surface area was calculated by taking into account both the undersize and oversize fraction at each run, including even the samples. Hence, this value can be considered to be the one which was produced by the use of total energy input—or the corresponding grinding time.

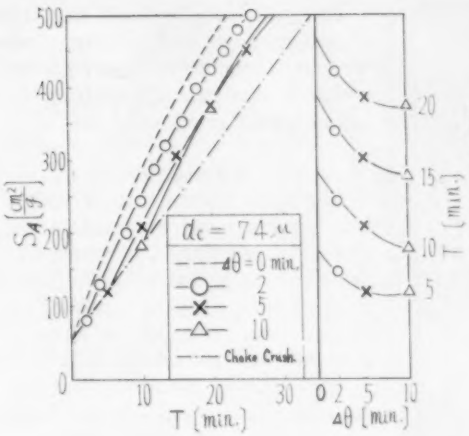



Figure 6

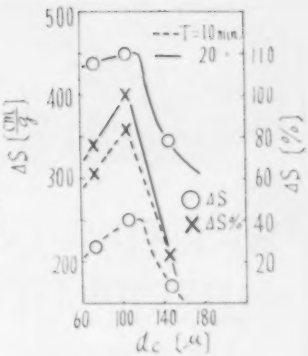



Figure 7

Consequently, the relationship between the over-all specific surface $S_A$ and the total grinding time T will show the general tendency of free crushing at a certain time interval. From this one can estimate the pattern of ideal free crushing by means of the extrapolation method stated above, as shown in Figure 6. The dotted line on the left-hand side was obtained by an extrapolation, as shown in the right-hand side. Obviously, the over-all energy efficiency is much better than that of batch choke crushing, which was estimated by connecting the initial points at three different time interval runs.

Figure 7 shows the relationship between the separating size $d_c$ and the increase of the specific surface $\Delta$ S, which is obtained by subtracting initial specific surface $S_o$ from $S_A$, or the ratio of the difference of surface increases for both cases of free crushing and choke crushing to the value of $\Delta$ S, which is obtained for choke crushing at two kinds of time duration T; the latter is expressed in percent. It can be found that the most efficient separating size under definite conditions, from the viewpoint of energy efficiency, is roughly in the vicinity of 110 microns.

Now let us compare this value with that which is calculated from the empirical equation (4) proposed above. Substituting $D_B$=¾ in.=1.91 cm. and $D_M$=15.5 cm. in equation (4), then one obtains the equation above.

$$d_c = 0.14 \times 15.5^{-0.25} \times 1.91^{0.75} = 0.0114 \text{ cm.} = 114 \text{ microns}$$

This value is in surprisingly good agreement with the value obtained for the ball mill tests. As long as such a confirmation with the use of a small model mill is good, perhaps the empirical equation must be applicable to practical purposes, because this equation was obtained from the experiments made under the energy input which was as much as that of the practical mill.

So it can be expected that the empirical equation must be useful for the design or operation of a tube mill for free crushing, although the present work can not always be extended to all materials. Moreover, in an actual case the sweeping out of finer particles from the mill is not necessarily adequate; considerable fractions of them still remain in the mill. As a result, the over-all tendency of the most efficient separating size might be changed slightly, depending upon the performance of classification through the mill.

(*Turn page*)

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In any event, however, this sort of information must give us a fundamental concept of free crushing, which is particularly important for closed-circuit grinding plants.

## SUMMARY

The basic information of perfect free crushing was obtained in the present paper, that is, the most efficient separating size from the viewpoint of energy and new surface relationship was proposed in terms of steel ball size and energy level.

The relation obtained with the crushing device of spring-shock type was proved to be adequately applicable to small ball mill tests; and, considering the energy level produced by the device, this basic relationship may be of use for the industrial mill.

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## Urbanization

(*Concluded from page* 103)

must be maintained to insure that only essential ones are made. Withdrawals for special purpose use must be kept to minimum size. It was noted that multiple use in the broadest sense must be practiced whenever possible. Improve public relations to make the necessity for mining clear to everyone, Mr. Dole urges.

Another authority, Orris C. Herfindahl, economist of Resources for the Future, Inc., Washington, D. C., sees "little prospect that the general problem of conflicts will diminish, for they will continue to arise as the inevitable consequence of continued growth of population and real output." He adds: "Increasing population and real incomes result in the growth of rival demands for the use of certain government lands . . . Perhaps even more important, they ensure that more people and firms will experience those undesirable effects that are a concomitant of various mineral operations."

A discussion by Thomas Maddock Jr., hydraulic engineer of the U. S. Geological Survey, points to the difficulties arising in situations of "quarrying or mining *versus* water reservoirs."

"Where a mining operation is in existence, it would seem logical that the protective measures be a part of the cost of the reservoir development," he states. "If the reservoir is in place, it would follow that a new mining operation would have to stand the cost of whatever measures were necessary to control the movement of water into the works.

"It is doubtful that any general comment can be made on the degree to which compromises can be reached on measures which would permit joint operation of a reservoir and a mine. Too much depends on the willingness of the parties involved to compromise. If there is a real willingness to try to find acceptable solutions, and a willingness to take care of the burden that compromise may require, then much success may be expected."

*Mining Engineering* regards a program of controlled utilization of resources of an undeveloped reserve as realistic to national requirements, and says, "Under the stress of booming population, dwindling natural resources, limited land availability and 'cold war' threats, how can the problem be viewed in terms other than the efficient use of land resources? With proper planning by all parties, it will become apparent that multiple land use by the public, business, and industry results in the efficient use of land by all, with the desired dignity of living."

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Directors of the American-Marietta Company and The Martin Company have formally approved plans for the consolidation of the firms into a new industrial enterprise to be known as the Martin-Marietta Corporation. Plans will not be implemented until after stockholders of both companies have voted on the merger at meetings to be held on October 9.

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Arkansas Cement Corporation's market has been extended into eastern Arkansas, western Tennessee, and northern Mississippi, as indicated by the firm's purchase of a 12-acre site on President's Island in the Memphis harbor industrial area. Four cement storage silos will be erected here at a cost of approximately $500,000. Combined storage capacity will be 50,000 bbl.



Enter 113 on card, page 183 →

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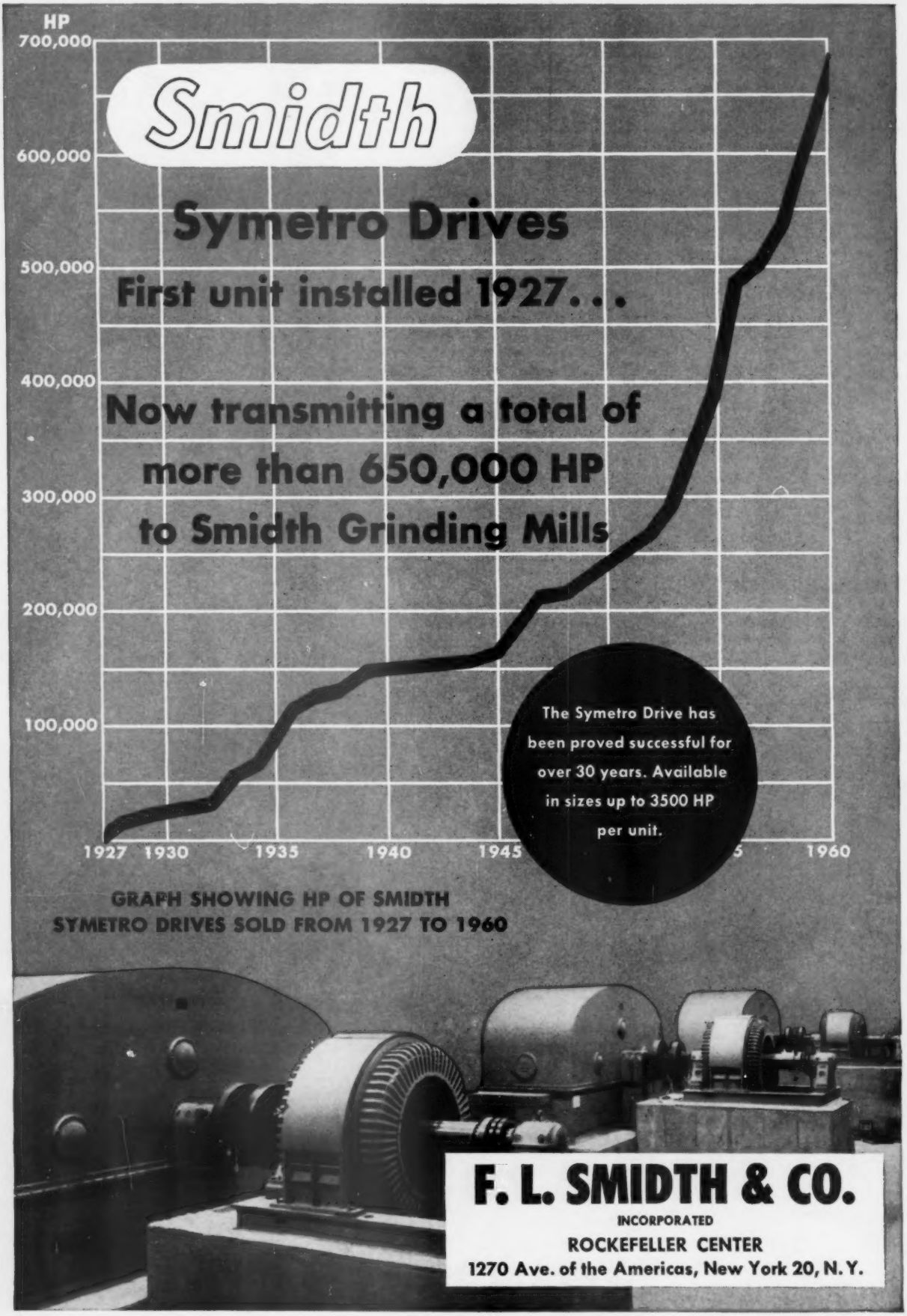


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# A.S.T.M.—

## *Attendance at 64th annual meeting breaks records; Name revision reflects broadening work, objectives*

**By C. E. PROUDLEY**
Director of Engineering
The Carolinas Ready Mixed Concrete Association, Inc.

● Miles N. Clair, the new president of A.S.T.M., is president of Thompson & Lichtner Co., Inc., of Brookline, Mass.

● Stanton Walker, director of engineering, N.S.G.A., was made an honorary member of A.S.T.M., in recognition of his long sustained service in both technical and administrative activities, and for eminent work in the fields of cement and concrete.

● Percy L. Rogers, vice-president, research, Riverton Lime and Cement Co., Riverton, Va., was given the A.S.T.M. Award of Merit in recognition of many years of constructive support and leadership in the work of committees on lime and on mortars for unit masonry.

ATTENDANCE at the 64th annual meeting of the American Society for Testing and Materials exceeded all previous records, being only 103 short of 4,000, if lady registrants are included. It is probable that in the near future these annual meetings will have to be split into groups of interrelated interests, with meetings staggered, in order to provide adequate facilities.

These annual A.S.T.M. meetings are outstanding affairs, thoroughly enjoyed from both the business and social aspects. Nowhere else will you find so many highly trained scientists who pay dues into an organization for the privilege of working, gratis, to develop specifications and test methods and to report research which is of mutual benefit to consumers and producers alike.

After 60 years of identification as the American Society for Testing Materials, the organization has changed its name by the insertion of the word "and" before "Materials." This was done because the scope of the society is now much wider than merely testing materials, including fundamental studies in the science of materials. The contraction "A.S.T.M." will continue to identify the society.

General sessions at which technical papers describing research on materials are presented and discussed, programmed very few subjects this year that were of direct interest to the mineral aggregates industry. Most of the work which affects producers of sand, gravel, crushed stone, and their processed products was accomplished in committee and subcommittee meetings.

However, there were general sessions pertaining to portland cement, portland cement concrete, and asphaltic concrete. Subjects pertaining to portland cement and portland cement concrete have been reported in the August issue of MODERN CONCRETE.

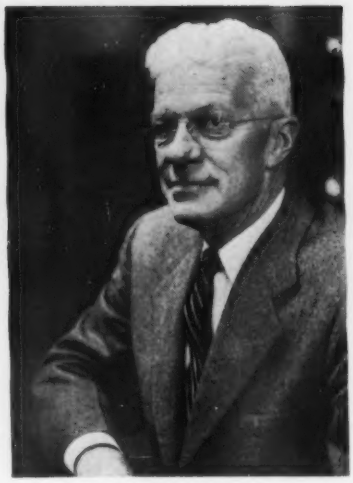
Committee C-7 on Lime, under the chairmanship of Dr. H. F. Kriege, consultant, Perrysburg, Ohio (elected chairman to replace the late Dr. James A. Murray), recommended immediate adoption of revisions of the Standard Specifications for Hydraulic Lime for Structural Purposes (C141-55). The revisions will eliminate the present Type B requirements, and there will be no reference made to type.

Committee C-3 on Chemical-Resistant Mortars, J. R. Allen, E. I. duPont de Nemours & Co., Wilmington, Del., chairman, proposed a Tentative Specification for Chemically Setting Silicate-Type Chemical-Resistant Mortar Intended for Use in Bonding Chemical-Resistant Structural Units.

Two new tentative standards have been proposed by Committee C-8 on Refractories, J. J. Hazel, Republic Steel Corp., Cleveland, Ohio, chairman. The first is a tentative classification of mullite refractories and the other a tentative classification of refractory granular dolomite. The mullite classification includes (1) refractory products, consisting predominantly of crystals formed either by conversion of one or more of the sillimanite group of minerals or by synthesis from appropriate materials employing either melting or

• William Lerch, consultant, cement and concrete, Park Ridge, Ill., contributing editor for *Modern Concrete*, received an A.S.T.M. Award of Merit.

• Robert R. Litehiser, engineer of tests, Ohio State Highway Testing Laboratory, Columbus, was also given the society's Award of Merit.



• John W. Whittemore, dean of engineering, Virginia Polytechnic Institute, Blacksburg, Va., received the A.S.T.M. Award of Merit.

sintering processes; and (2) refractory dolomite, consisting of raw refractory dolomite, calcined refractory dolomite, or rotary kiln-fired, dead-burned, refractory dolomite. A very large number of revisions, some of considerable importance, were recommended.

The Committee on Gypsum (identified as C-11), under the chairmanship of G. W. Josephson, U. S. Bureau of Mines, Pittsburgh, Pa., recommends the establishment of two new standards and two tentative standards, plus revisions of those currently in effect.

The new standards are methods currently included in the Standard Methods of Testing Gypsum and Gypsum Products (C 26-60) but these will appear in their new form as three separate methods: Standard Methods of Chemical Analysis of Gypsum and Gypsum Products; Standard Methods of Physical Testing of Gypsum Plasters and Gypsum Concrete; and Standard Methods of Physical Testing of Gypsum Board Products and Gypsum Partition Tile or Block.

There are, of course, additional necessary revisions and changes in the separation which will be found in each of the new standard methods. The new tentative standards are Specifications for Joint Treatment Materials for Gypsum Wallboard Construction, and Method of Testing Joint Treatment Materials for Gypsum Wallboard Construction.

Committee C-16 on Thermal Insulating Materials proposed two new tentative methods of test which were accepted by the Administrative Committee on Standards. They are Tentative Methods of Test for Mastic Coatings Used in Conjunction with Insulations (C461-60T) (accepted September 29, 1960), and Tentative Methods of Test for Corrosion of Steel in Contact with Wet Thermal Insulating Cement (C464-61T) (accepted March 1, 1961). W. C. Lewis, U. S. Forest Products Laboratory, Madison, Wis., is chairman of Committee C-16.

Tentative methods of testing asbestos-cement pipe were proposed by Committee C-17 on Asbestos-Cement Products, W. V. Friedlaender, chairman, Universal-Atlas Cement Division, U. S. Steel Corp., New York City. These tentative methods include a hydrostatic proof test, a flexural proof test, a crushing test, and a test for uncombined calcium hydroxide. The latter replaces the present alkalinity test found in Specifications C 296 and C 428.

Committee D-4 on Road and Paving Materials has a new chairman, R. E. Bollen, of the Highway Research Board, Washington, D. C., who replaces A. B. Cornthwaite, recently employed by the Asphalt Institute. Professor W. H. Goetz of Purdue University was appointed first vice-chairman.

Most of the activities of this committee are closely related to bituminous paving interests. There are, however, some specifications and tests for which Committee D-4 is responsible which are of general interest. Two of these are C 117-49, Amount of Materials Finer than Number 200-sieve in Aggregate and Sieve Analysis of Fine and Coarse Aggregates (C 136-46). Both of these have been revised to clarify the procedures and to give more details than were furnished before.

Among those especially honored at the 64th annual meeting was Stanton Walker, who was made an honorary member of the society. Stanton Walker is director of engineering for the National Sand and Gravel Association and also for the National Ready Mixed Concrete Association, Washington, D. C. The honor was given in recognition of long-sustained service to the society in both technical and administrative activities, and particularly for eminent work in the field of cement and concrete.

The Award of Merit, given to A.S.T.M. members who have performed outstanding service in the society's technical committee work, was given to five individuals well known in the field of concrete and concrete aggregate research:

William Lerch, consultant on cement and concrete (retired administrative assistant, Research and Development Division, Portland Cement Association, Chicago, Ill.), in recognition of outstanding service and contributions to A.S.T.M. research and standards work, especially Com-

mittee C-9 on Concrete and Concrete Aggregates.

Robert R. Litehiser, engineer of tests, Ohio State Highway Testing Laboratory, Columbus, Ohio, in recognition of long and notable work in the field of cement, of extensive contributions to many technical committees, particularly C-1 on Cement, and for administrative service.

Percy L. Rogers, vice-president, research, Riverton Lime and Stone Co., Riverton, Va., in recognition of many years of constructive support and leadership in the work of Committees C-7 on Lime and C-12 on Mortars for Unit Masonry, and especially for numerous researches relating to the development of methods of test for the efflorescence potential of masonry mortars.

H. R. Snoke (retired assistant chief, Building Technology Division, and chief of the Floor, Roof and Wall Covering Section, National Bureau of Standards, Washington 25, D. C.), Chevy Chase, Md., in recognition of long and active service on Committee D-8 on Bituminous Materials for Roofing, Waterproofing, and Related Building or Industrial Uses, Committee C-17 on Asbestos-Cement Products, and for administrative service.

John W. Whittemore, dean of engineering, Engineering Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va., in recognition of valued contributions to the work of Committee C-15 on Manufactured Masonry Units and for support as committee chairman.

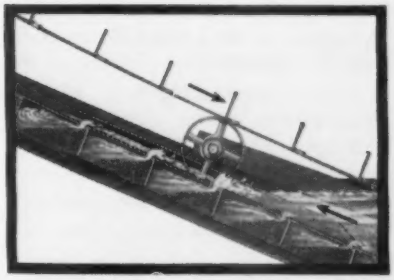
New officers for the society were installed during the meeting. They include Miles N. Clair, Thompson & Lichtner Co., Inc., Brookline, Mass., president; R. Wade Seniff, manager of research, Baltimore and Ohio Railroad Co., Baltimore, Md., senior vice-president (re-elected); and Alfred C. Webber, assistant to the laboratory director, Research and Development Division of the Polychemicals Department, E. I. duPont de Nemours & Company, Inc., junior vice-president.

Among the new directors elected for three-year terms were Albert G. H. Dietz, professor of building engineering, Massachusetts Institute of Technology, Cambridge, Mass., and Bruce W. Gonser, technical director, Battelle Memorial Institute, Columbus, Ohio.

# WASH WATER goes UP . . .

## slimes cannot remix with sands . . . in the "OVERDRAIN" Classifier

The "Overdrain" Classifier is a completely new device in the field of mechanical wet classifiers. The belt, with lifting flights attached beneath, moves upwardly out of the sand bed between two stationary side shrouds—creating the effect of a series of moving, closed, washing compartments.



Section through "Overdrain" Classifier showing upward-moving, closed, washing compartments.

The only outlet from these compartments is via holes in the belt above. Surplus liquid and slimes discharge through these "overdrain" holes without mixing with the oncoming sands. The end result is an extremely clean sand discharge, excellent de-sliming—making the "Overdrain" Classifier an ideal washing device.

Unretouched photograph of "Overdrain" action above the belt—water and slimes discharging upwardly.

*Write for catalog 39-C-8 which furnishes complete application details on this and other Hardinge hydraulic classifying equipment.*

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# Production and Value of Sand and Gravel in 1960

By VINCENT P. AHEARN JR.

Assistant to the
Associate Managing Director,
National Sand and Gravel Association

THE National Sand and Gravel Association has completed its eighth annual survey of the production and value of sand and gravel. This survey is designed to fill the need for a current measurement of the contribution which the sand and gravel industry makes to the national economy.

The Association has record of 2,074 companies producing sand and gravel in the United States and Canada. Questionnaires were sent to each of these companies. Complete returns to the questionnaire were received from 722 companies, operating 1,210 plants. Complete data were not available for an additional 56 companies operating 78 plants. Statistics from these latter reports, however, have been incorporated in the survey report wherever possible, and their inclusion makes a total participation of 778 companies operating 1,288 plants.

The results of the survey are set forth in four tables. Table 1 shows that 272,316,223 tons of sand and gravel, valued at $308,350,480, were produced by the reporting companies in 1960. This represents a majority of total commercial sand and gravel tonnage. The average value per ton of sand and gravel in 1960 was $1.13. Comparable results from the production and value surveys for 1958 and 1959 are also included in Table 1.

This decrease in total production in 1960 over 1959 is reflected in a decrease in total value. Total value in 1960 represents a decrease of $29,402,605 from the total value of $337,753,085 in 1959. Total production and value for 1960, however, were both above the same figures for 1958. Similarly, the decrease in total value of sand and gravel produced in 1960 over 1959 reduced the average value per ton of sand and gravel to $1.13 from its 1959 level of $1.17, a decrease of approximately 3 percent. Thus, the average value per ton of sand and gravel in 1960 decreased to the same level as in 1958.

It is interesting to note that average production per reporting plant remained virtually the same, decreasing less than 1 percent, whereas average production per reporting company increased by more than 17 thousand tons, or approximately 5 percent. Average production per reporting company and average production per reporting plant remained substantially above the same figures for 1958.

An analysis of the types of transportation used by the sand and gravel industry in 1960, as compared to 1959, is presented in Table 2. The percentages of production shipped by rail, water, and unspecified methods in 1960 showed slight decreases. These decreases were offset by a 2 percent increase in the percentage of production transported by truck in 1960. Truck transportation, which accounted for 73.1 percent of total production in 1958, and decreased to 70.3 percent in 1959, increased again almost to its 1958 level. Transportation by rail continued to decrease in importance. Transportation by water, which had risen from 6.2 percent in

**TABLE 1—Sand and Gravel in 1958, 1959, and 1960**

| | 1958 | 1959 | 1960 |
|---|---|---|---|
| Production: | | | |
| Sand (tons) | 119,989,477 | 131,302,239 | 119,508,048 |
| Gravel (tons) | 147,818,525 | 158,021,507 | 152,808,175 |
| Total (tons) | 267,808,002 | 289,323,746 | 272,316,223 |
| Value: | | | |
| Sand | $123,203,844 | $141,806,418 | $120,701,462 |
| Gravel | 179,714,285 | 195,946,667 | 187,649,018 |
| Total | 302,918,129 | 337,753,085 | 308,350,480 |
| Average value per ton: | | | |
| Sand | $1.03 | $1.08 | $1.01 |
| Gravel | 1.22 | 1.24 | 1.23 |
| Total | 1.13 | 1.17 | 1.13 |
| Companies surveyed | 2,058 | 2,120 | 2,074 |
| Companies reporting | 844 | 871 | 778 |
| Number of plants operated by reporting companies | 1,377 | 1,364 | 1,288 |
| Average production per reporting company (tons) | 317,308 | 332,174 | 350,020 |
| Average production per reporting plant (tons) | 194,487 | 212,114 | 211,426 |

1958 to 10.0 percent in 1959, declined to 9.2 in 1960.

An analysis of consumption of sand and gravel in 1960 is contained in Table 3. Comparable figures for consumption of sand and gravel in 1959 are also given. The increase of 2 percent in sand and gravel consumption by the heavy construction industry is the only significant change over 1959. This seems partially explained by the fact that the percentage of sand and gravel production in 1960 for which the type of consumption was not specified decreased to 3.8 percent from its 6.3 percent level in 1959. The two principal consumers of commercial sand and gravel in 1960 were heavy construction, 44.7 percent, and the ready mixed concrete industry, 33.2 percent.

California again led all states in total production, reporting more than 44 million tons, followed by Illinois, Michigan, Indiana, Texas, New York, Pennsylvania and Ohio, in that order. California also led all other states in total tonnage shipped by truck. Texas led in total tonnage shipped by rail, and New York in total tonnage shipped by water.

Table 4 is an analysis of the distribution of sand and gravel production in 1960 by size of company. It is noteworthy that the 65 companies which produce more than 900,000 tons, representing 8.4 percent of reporting companies and 24.1 percent of the plants, produced more than 50 percent of total commercial sand and gravel production in 1960. Also noteworthy is the fact that substantially more than half of the reporting companies produced less than 200,000 tons of sand and gravel in 1960, and that companies which fell in size groups below 200,000 tons, representing 63 percent of reporting companies, accounted for 15.4 percent of total production in 1960. Table 4 also shows that 61 companies, or 7.0 percent of all reporting companies, produced more than 1,000,000 tons of sand and gravel in 1960.

**TABLE 2—Methods of Transportation of Sand and Gravel in 1959 and 1960[1]**

| | 1959 | | 1960 | |
|---|---|---|---|---|
| Type of Transportation | Short Tons | Percent of Total | Short Tons | Percent of Total |
| Truck | 187,294,092 | 70.3 | 184,760,478 | 72.3 |
| Rail | 44,074,819 | 16.6 | 40,131,298 | 15.7 |
| Water | 26,573,289 | 10.0 | 23,605,258 | 9.2 |
| Unspecified | 8,299,220 | 3.1 | 6,909,703 | 2.8 |
| Total | 266,241,420 | 100.0 | 255,406,737 | 100.0 |

**TABLE 3—Consumption of Sand and Gravel in 1960[1]**

| | 1959 | | 1960 | |
|---|---|---|---|---|
| Type of Consumer | Short Tons | Percent of Total | Short Tons | Percent of Total |
| Construction (buildings, highways, streets, etc.) | 113,799,912 | 42.7 | 114,175,462 | 44.7 |
| Ready mixed concrete | 88,045,347 | 33.1 | 84,860,554 | 33.2 |
| Concrete products | 12,723,034 | 4.8 | 10,524,782 | 4.1 |
| Railroad ballast: | | | | |
| (1) Prepared | | | | |
| (a) Less than 40% crushed | 1,358,245 | 0.5 | 1,237,593 | 0.5 |
| (b) More than 40% crushed | 1,094,650 | 0.4 | 1,162,625 | 0.5 |
| (2) Unprepared (Bank Run) | 2,089,294 | 0.8 | 2,017,679 | 0.8 |
| Sold through dealers | 21,607,598 | 8.1 | 22,850,523 | 8.9 |
| Other | 8,826,124 | 3.3 | 8,859,726 | 3.5 |
| Unspecified | 16,697,216 | 6.3 | 9,717,793 | 3.8 |
| Total | 266,241,420 | 100.0 | 255,406,737 | 100.0 |

[1]Because of incomplete production and value reports from 56 companies, totals from these companies could not be included in these tables.

**TABLE 4—Distribution of 1960 Sand and Gravel Production by Size of Company**

| Size Group (tons) | No. of Companies | No. of Plants | Production (tons) | Percent of Reported Production | Percent of Participating Companies | Percent of Participating Plants | Accumulated Percents of Totals: Total Production | Total Companies | Total Plants |
|---|---|---|---|---|---|---|---|---|---|
| 0— 25,000 | 72 | 73 | 970,338 | 0.3 | 9.3 | 5.7 | 0.3 | 9.3 | 5.7 |
| 25,000— 50,000 | 86 | 92 | 3,191,216 | 1.2 | 11.1 | 7.1 | 1.5 | 20.4 | 12.8 |
| 50,000— 100,000 | 131 | 162 | 9,782,704 | 3.6 | 16.8 | 12.6 | 5.1 | 37.2 | 25.4 |
| 100,000— 200,000 | 180 | 242 | 25,826,016 | 9.5 | 23.1 | 18.8 | 14.6 | 60.3 | 44.2 |
| 200,000— 300,000 | 101 | 137 | 24,266,629 | 9.0 | 13.0 | 10.6 | 23.6 | 73.3 | 54.8 |
| 300,000— 400,000 | 55 | 89 | 18,892,089 | 6.9 | 7.0 | 6.9 | 30.5 | 80.3 | 61.7 |
| 400,000— 500,000 | 29 | 51 | 12,757,807 | 4.7 | 3.7 | 4.0 | 35.2 | 84.0 | 65.7 |
| 500,000— 600,000 | 24 | 43 | 13,051,345 | 4.8 | 3.1 | 3.3 | 40.0 | 87.1 | 69.0 |
| 600,000— 700,000 | 13 | 26 | 8,373,447 | 3.0 | 1.7 | 2.0 | 43.0 | 88.8 | 71.0 |
| 700,000— 800,000 | 10 | 36 | 7,594,403 | 2.8 | 1.3 | 2.8 | 45.8 | 90.1 | 73.8 |
| 800,000— 900,000 | 12 | 26 | 10,139,585 | 3.7 | 1.5 | 2.0 | 49.5 | 91.6 | 75.8 |
| 900,000—1,000,000 | 9 | 19 | 8,468,842 | 3.1 | 1.2 | 1.5 | 52.6 | 92.8 | 77.3 |
| 1,000,000—2,000,000 | 31 | 139 | 43,522,713 | 16.0 | 4.0 | 10.8 | 68.6 | 96.8 | 88.1 |
| 2,000,000—3,000,000 | 15 | 82 | 36,620,443 | 13.4 | 1.9 | 6.4 | 82.0 | 98.7 | 94.5 |
| 3,000,000—5,000,000 | 7 | 45 | 27,533,206 | 10.2 | 0.9 | 3.5 | 92.2 | 99.6 | 98.0 |
| Over 5,000,000 | 3 | 26 | 21,325,440 | 7.8 | 0.4 | 2.0 | 100.0 | 100.0 | 100.0 |
| Total | 778 | 1288 | 272,316,223 | 100.0 | 100.0 | 100.0 | | | |

Operating in silica sand material, gravel producer Vulcan Materials had to rebuild tracks every six months. Then they tried a rubber-tired Michigan, report:

# "Track costs eliminated! Production up 20%!"

"Abrasion—that's our problem here," says E. L. "Bud" Gist, plant superintendent for Vulcan Materials Company, Montgomery, Alabama. "Used to use a crawler in our gravel operations, and had to completely rebuild or replace a set of tracks *every six months*. Then we bought a rubber-tired Model 280 Michigan Tractor Dozer. Our records show it has *cut dozing costs considerably*. Track wear is a thing of the past, of course. And the Michigan's power and speed have *upped dozer production* by 20 percent."

### Dozes sand waste

One good example of savings at Vulcan Materials' 25,000 ton-per-month gravel plant is on one of the 262 hp Michigan's primary assignments . . . dozing wet sand away from two 12-inch surge pipes which carry material from de-sander to waste pile. One-way pushes, from 30 to 300 feet, are made at about twice crawler speeds . . . yet wear on the rig's big 29.5-25 wide-base tires has been almost negligible. In fact, company officials estimate the Michigan will log "well in excess of 6,000 hours before tires will require retreading."

### Cleans around de-sander

Four-wheel-drive Michigan also makes frequent trips from waste pile to de-sander (600 feet away) for cleanup duty. Here, with truck-like mobility, the speedy Michigan follows a haul unit under the hopper . . . blades away spillage . . . makes a maintenance run over the approach road . . . and returns to the sand waste pile . . . all in just a few minutes.

### Maintains haul roads

Previously, the crawler required more than an hour to grade the two miles of plant roads. Now, the 262 hp Michigan blades off the same mileage in 30 minutes . . . easily keeps clear of haul units . . . and returns to its duties at the de-sanding plant before production lags.

### Pulls out stuck haul units

Occasionally, the big 35 ton haul units, used to transport gravel from river bed to plant, "mire down" on the river approach road. Then the 28 mph Michigan quickly drives over (a dis-

tance of about one-half mile) . . . pulls the stuck haulers through the soft spots . . . and as quickly returns to its original task.

### Works around re-screening plant 1.8 miles away

One of the greatest advantages of Michigan speed has shown up around the main re-screening plant, 1.8 miles from the de-sanding plant. Because of the distance involved, the crawler was never called on to work in this area. Now, when the Michigan can be spared from the sand stockpile, it quickly drives to the re-screening plant (in less than 5 minutes) . . . performs such tasks as spillage cleanup, dozing back the surge pile and, occasionally, feeding the re-screening hopper.

Reports Supt. Gist, "The Michigan can travel to the re-screener, do all jobs required, and return to the de-sander in less time than the crawler would have taken to travel the distance one-way. We sure are pleased with its all-around performance. Operating costs are low and availability excellent. With all the additional jobs the Michigan is doing for us, and with the way it has greatly assisted us in maintaining top plant production, I don't know how we ever operated without it."

Fourteen miles away, another Vulcan Materials' plant (the Conley Plant) also uses a Michigan to boost production—this time a Model 175A Tractor Shovel. The 2¾ yd Michigan loads out all trucks (½ ton to 20 tons), does all cleanup and stockpiling required at the 2,500 ton-per-day sand plant. After 3,000 hours of operation, Plant Superintendent W. M. Clark reports Michigan's performance "excellent . . . availability just as good."


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*Enter 120 on card, page 183*

An over-all view of the plant and unloading operations of Minerals and Chemicals Philipp Corporation. The boxcar in position is being unloaded through a telescoping conveying line to the left of the silos, the material being drawn up into the filter at the top of the near silo. (Process bins are in the structure at the right.)

# Unique Handling Techniques Used To Automate New Georgia Clay Processing Plant

A VITAL requirement of the reclaiming system installed at the recent plant addition of the Attapulgus (Ga.) plant of Minerals & Chemicals Philipp Corporation was the ability to withdraw varying blends of clay from two silos, each holding a different type, and deliver to process bins in which the material level must be maintained within a height of 18 in.

This uniform head of material was necessary in order to meter a closely controlled quantity of clay to further process equipment. The devices employed to solve this problem involve the unique use of standard pneumatic conveying components which resulted in a fully automatic system for the plant.

At the Attapulgus plant, two different clays are blended with additives; and the mixture is extruded into a variety of pellets used as a cracking catalyst in the production of high octane gasoline. The operation involves unloading, storing, reclaiming, blending, screening, metering, extruding, and finish processing.

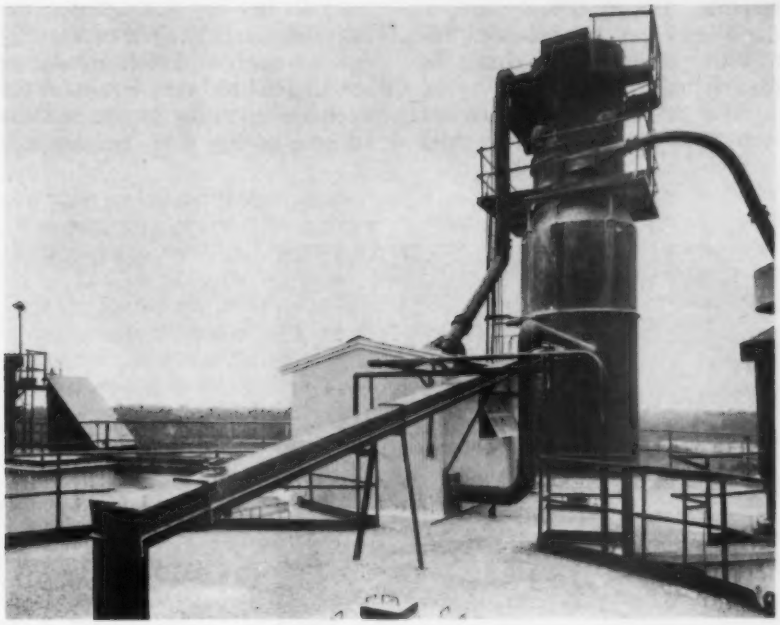
**General Process Outline** A pneumatic conveying system is used to unload the various grades of clays from boxcars or hopper-bottom cars to either of two storage silos. When the clays have been reclaimed from these silos, in varying proportional amounts, they pass first through a rotary cut-off valve and then through a special feeder which determines the percentages of each clay necessary for a specific blend.

The blended material is then conveyed through a second pneumatic conveying system to a vibrating screen for further blending before air-assisted distribution to any of three process bins takes place. The final steps involve mixing with additives, extrusion into pellets, and pellet delivery to final processing.

Although this appears on the surface to be a simple outline of material flow, rigid control over material blend and the need for a uniform head of material in each of the process bins at all times required the perfection of several unusual aeration and pneumatic conveying applications.

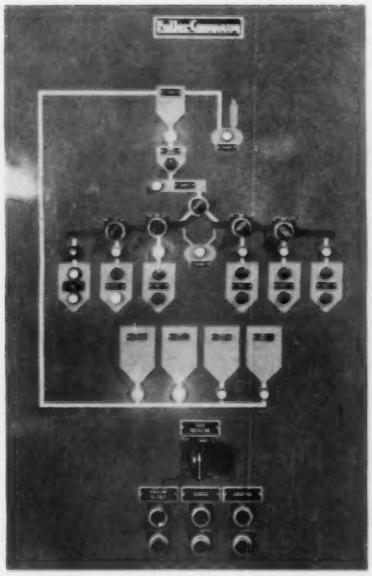
**Pneumatic Unloading** A Fuller Company Airveyor pneumatic conveying system unloads the clays from bulk rail car-

Opposite page: A close-up of the control panel for unloading operations.

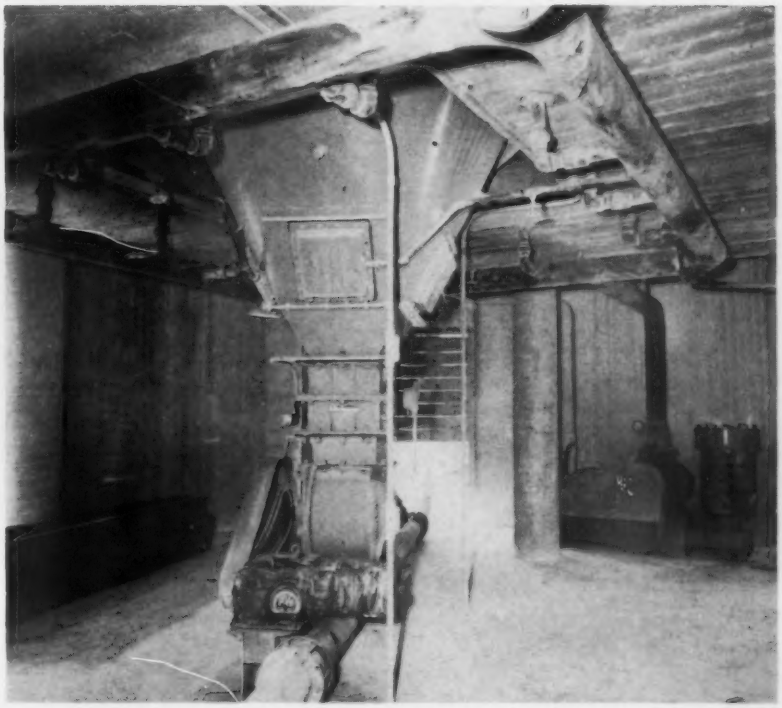


Atop the storage silos a pneumatic conveyor distributes material from the filter, right, supported on an extra high enclosure. The equipment housing, center, holds the exhauster and fan for the conveying system.

The reclaiming mechanism, located under the storage silos. The hopper, center, delivers material through a rotary valve and feeder into the conveying line. The main header system, forming a square at the top of the picture, takes air from the blower, background, into 12 aeration units inside the silo. The square aeration units are attached to a pyramidal hopper and also receive air from the square header.



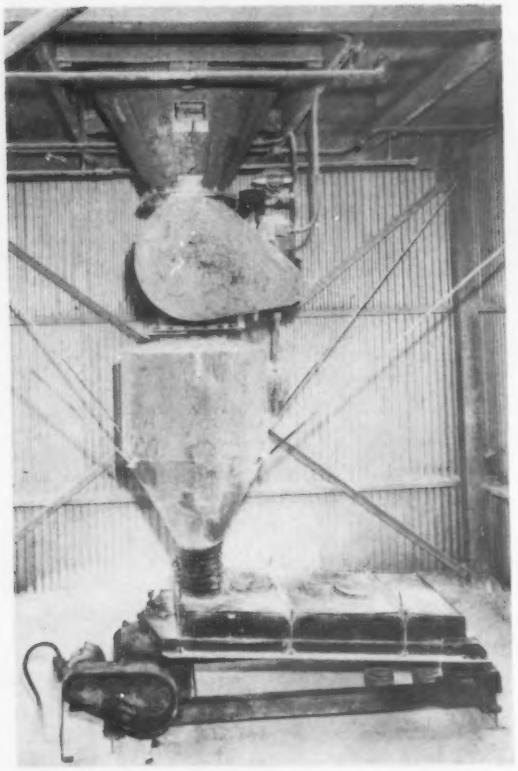
A close-up of the control panel for the reclaiming system.



riers. For standard boxcars, two 6-in. fan-type nozzles suck up the material. Hopper-bottom cars, on the other hand, are unloaded with a newly designed twin-nozzle unloading unit.

Both of these devices connect with 25 ft. of 7-in. (diameter) flexible metal hose, which joins a unique "telescoping" pipe arrangement for delivery of material to the Airveyor filter. The telescoping feature allows considerable latitude in spotting railroad cars, eliminates the need for operators to add sections of hose as they enter boxcars, and reduces hose breakage and deterioration because proper hose length is assured inside the car as the material is removed from the door area to the ends of the car.

This telescoping arrangement also features a reversing gearmotor and drum on which a cable is wound to elevate or lower the telescope. The pipe is 30 ft. long and 8 in. in diameter. Weatherproof high- and low-limit switches on the side of the silo determine the upper and lower limits of telescope travel.

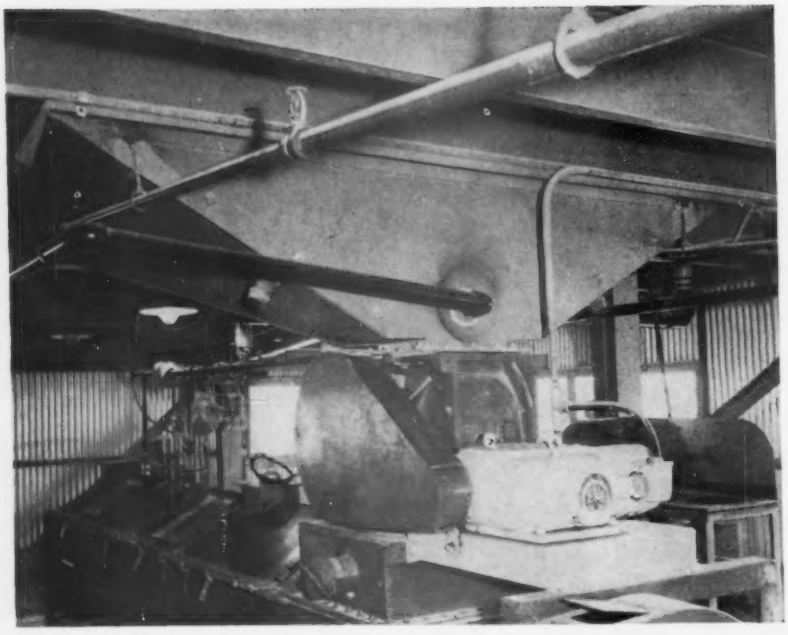


The bottom section of the reclaiming conveyor filter, located above the processing bins, delivers through an airlock into the surge hopper, which discharges through a flexible connection to the vibrating screen, bottom. A horizontally mounted bin level indicator on the right side of the surge hopper stops the metering feeders under the silos if too much material is being delivered or if the screen cannot take away the material fast enough.

**Storage Arrangements** There are at present two storage silos, each of slip-formed concrete construction, measuring 30 ft. in diameter and 100 ft. in height. Clays, weighing approximately 40 lb. per cu. ft., are conveyed from cars to the Airveyor filter above the silos at the rate of 25 t.p.h. The filter is so placed that it will be able to serve two additional silos when the need arises for an increase in production. In fact, all basic conveying equipment was designed to serve double the present needs.

The No. 6 Airveyor filter is an outdoor unit, measuring 6 ft. 9 in. in diameter; it is divided into four compartments. It has a special 20-ft. high bell bottom to allow for the installation of a Fuller-Huron Airslide conveying system for distribution to the two silos. A 53-ft. length of 10-in. enclosed Airslide fluidizing conveyor delivers the clays from filter discharge to the silos. Conveying of material from rail cars to storage is completely controlled from a Fuller panel located immediately inside the door on the grade level near the point where the cars are spotted.

**Reclaiming, Blending** Each of the two storage silos was built in such a way that the floor slab was poured on a 15-degree slope leading funnel-like to a central discharge point. Around this slope, equally spaced like the spokes



This close-up shows the unique construction of the process bin bottom. The rotary feeder delivers material to further processing equipment, bottom, for additional mixing before discharge to the extruder. The black air pipe coming to the vertical side and front introduces air to one of several open-type aeration units mounted inside the bin.

on a wheel, are 12 8-in. open-type Airslide sections, each 12 ft. long, which point toward the central opening. This central opening, in each case, is a four-sided pyramid-shaped hopper with Fuller aeration pads mounted on the sides.

The hopper, attached to the concrete portion of the silo, slopes into a four-sided flange. A Fuller rotary cut-off valve, hand operated with micro switches to indicate position, is installed on the flange. The bottoms of these silos were equipped in this manner so that when material was to be reclaimed to process, there would be an immediate flow of material, caused by proper aeration. Sutorbilt blowers provide the necessary aeration air supply.

Immediately beneath the Fuller rotary valve is a short transition sleeve which connects to a totally enclosed Fuller rotary feeder. This unit is driven by a P. I. V. drive which enables an operator to reclaim material in varying amounts from each silo, (*e.g.*, 20 percent of material from Silo No. 1 and 80 percent from Silo No. 2, thereby achieving the 100 percent capacity of 10 t.p.h. of the system).

With this arrangement, the reclaiming Airveyor system can withdraw material in various total quantities up to 10 t.p.h., and in any proportion required. It is possible to draw from only one silo by merely turning off either of the two feeders.

**Feed to Process Bins** Material from the discharge of the totally enclosed feeders is conveyed by the second Airveyor system to a point above the three process storage bins. The Airveyor filter, of outdoor construction, is supported on building steel, which also forms the roof of the structure. The filter discharges through a Fuller rotary airlock into a surge hopper which is attached to the vibrating screen. If too much material is brought up by the Airveyor system, causing a buildup in the surge box, a Fuller high-level material indicator immediately stops the variable-speed charging feeders at the bottom of the storage silos.

The screen acts further to blend the material before it passes through a spout to a second distributing system. The latter consists of 44 ft. of an 8-in. Airslide, closed type, conveying system on a slope of 8 degrees. Motor-operated side discharge valves, actuated by dual material-level indicators, determine which of the process bins is ready to receive material. Low-level and high-level indications are separated by 18 in. of space.

These process bins are also of unusual construction, with shallow sloping bottoms and vertical front sides. Immediately below each of these vertical front sides is another set of Fuller rotary feeders, equipped with variable-speed P. I. V. drives. These feeders meter material at varying rates to further process equipment. Inside the shallow-bottom process bins are several 8-in. open-type F-H Airslide sections to provide the full fluidization of the material. Since the material head varies by less than 18 in., the feeders always discharge a precise quantity of clay at any given speed.

Minerals and Chemicals Philipp reports that it is thus possible to meter additives accurately into further process equipment, by setting the speed of the feeder, which achieves unusually accurate blending of additives and clays to get the right consistency to feed the extruders.

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# World Wide Cement News

*Cambodia*—Plans have been completed for the construction of the Chicom cement plant near Chakrei Ting, Kampot province. The plant will have a capacity of 160 metric tons daily. More than 300 workers will be employed, including 17 technicians.

*Mexico*—Cement production in Mexico reached the highest level in the industry's history in 1960, totalling 3,086,126 metric tons. Imports (all from the United States) totalled 4,902 tons, valued at $122,569.

The existing plant of Cementos Atoyac, S.A., will be razed when the one now under construction has been completed. Capacity of the new facility will be more than 300 tons per day.

*Philippine Republic*—Mindanao Portland Cement Company's new plant, scheduled for completion in December, 1961, is expected to have a capacity of 10,000 to 12,000 bags (94-lb. bags) daily. The Fuller Company is supplying processing and electrical equipment, and the McDonough Construction Company is erecting the plant and installing the equipment.

San Jose Cement Corporation, Mindoro, has contracted with C. Itoh and Company, and Kawasaki Dockyard Company of Japan for a complete cement plant, procured through reparations agreements between the Philippines and Japan. Capacity will be 10,000 bags of cement daily.

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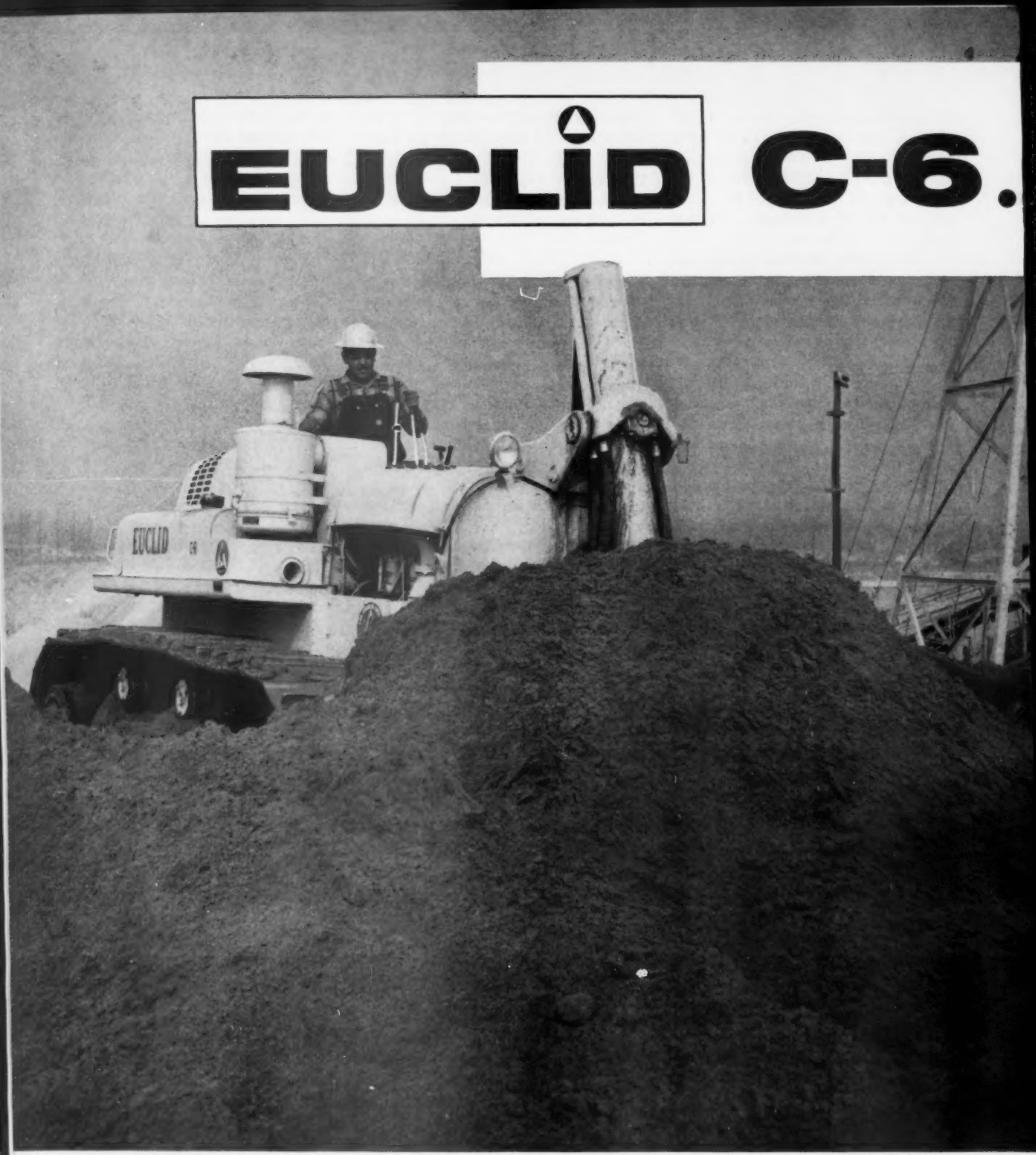
At an open house held to mark the completion of the improvements at Marquette Cement Manufacturing Company's Nashville plant approximately 1,200 visitors inspected the modernized facilities. With the new equipment, featuring electronic and nucleonic devices, cement will be produced at Nashville at the rate of 1,200,000 bbl. annually.

# EUCLID C-6.




The Euclid C-6 Crawler is your best tractor buy for lowest operating costs... for work-ability... and for reliability in heavy service.

# . . with new Hydraulic Dozers

## *now even more work-ability!*

With Torqmatic Drive and full-power shift, the "Euc" C-6 provides fast-as-a-fox maneuverability . . . changes direction, from forward to reverse and back again with just a flick of the wrist. That kind of performance calls for fast blade action so the full work capacity of the C-6 can be utilized. Conventional tractor hydraulic systems didn't measure up . . . in blade speed, low maintenance cost and freedom from excessive downtime resulting from wear and heat build-up.

Euclid and Gar Wood engineers combined their years of hydraulic experience with construction equipment and have developed a system that puts the C-6 even further ahead of other dozers in the same class. Incorporating a variable volume pump and single hydraulic cylinder, the C-6 with hydraulic blade provides important advantages in operation and maintenance . . . advantages that are further proof of the C-6 being the lowest cost tractor in the 200 h.p. class, and most versatile by far!

### COMPARE THESE FEATURES OF A "EUC" C-6 HYDRAULIC DOZER WITH YOUR PRESENT EQUIPMENT!

- **Fast blade speed—up or down . . .** almost twice as fast as competitive units
- **More horsepower for tractive effort . . .** operator "meters" pump volume—no wasted engine power because no oil is pumped in "hold" position.
- **Better visibility . . .** blade corners not hidden by hydraulic cylinder or "A" frame
- **Greater lifting capacity . . .** improved mechanical advantage of single lever arm—blade mounting closer to center of front track roller
- **Less downtime . . .** only one cylinder—no high pressure on drive shaft seal—heat problem eliminated—pump works only when pressure is needed for raising or lowering blade

GM GENERAL MOTORS EUCLID

EUCLID

DIVISION OF GENERAL MOTORS, HUDSON, OHIO

*Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland*

# Wide Variety of Industrial Minerals Processed in Multiplant Complex Of Dry Mix Materials Company

By HARRY F. UTLEY

ANOTHER ON THE SPOT report

A DECADE ago Boyd E. Oliver established Dry Mix Products Company at Roseville, Calif., to supply a growing need, particularly among do-it-yourselfers, for packaged dry-mixed concrete, mortar, plaster, and related materials. The development and growth of this venture is a well known success story in the West.

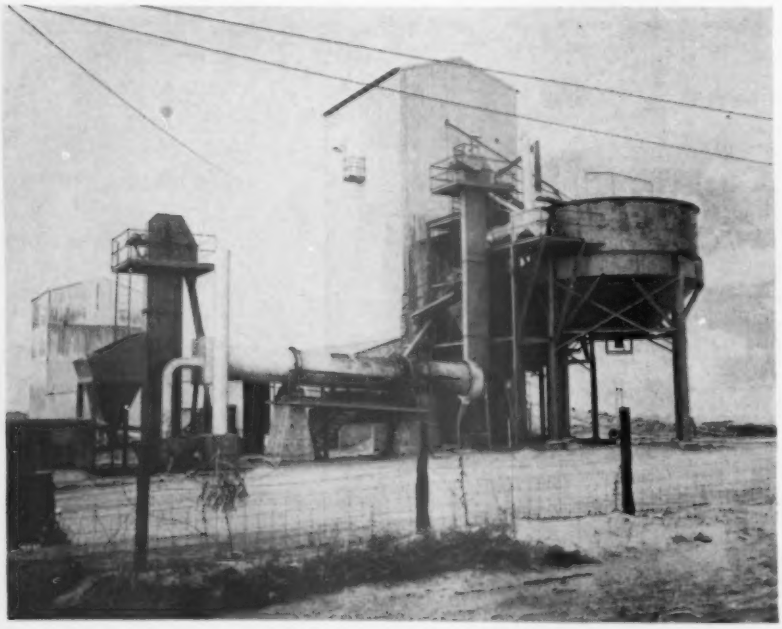
In the interim, and while broadening an extensive organization of dealer outlets in the West Coast states and also Alaska and Hawaii, Mr. Oliver became keenly aware of a similar demand in industry for numerous processed nonmetal minerals formulated to existing standards or prepared to meet the specific needs of industrial concerns.

The result—a brand-new multiplant operation at Roseville which utilizes the sands, clays, quartzes, granites, and colored rocks occurring in the Mother Lode Country. The new venture, operated as the Dry Mix Materials Co., involves five separate and distinct processing units, each geared to turn out a different line of end-products.

**Five Separate Installations** Erected in 1960, the operation includes (1) a drying-and-classifying unit for the production of industrial blasting and filter sands; (2) a fine-grinding plant employing air-classification for the production of 200- and 235-mesh clays; (3) a complete crushing-washing-screening plant turning out roofing granules, crushed granite, quartz chips, and colored decorative rock; and (4) a foundry-material plant producing principally cupola-lining mixtures. These four processing units are continuous on the site at Roseville, which is adjacent to major highway and rail transportation.

The fifth, a sand-beneficiation circuit installed by Dry Mix as a special department in the commercial sand-and-gravel plant of Chevreaux Sand & Gravel Company, is located at the source of supply near Auburn, Calif. Here the sand, which consists largely of gold-mine tailings of an earlier era, is harvested from the Bear River.

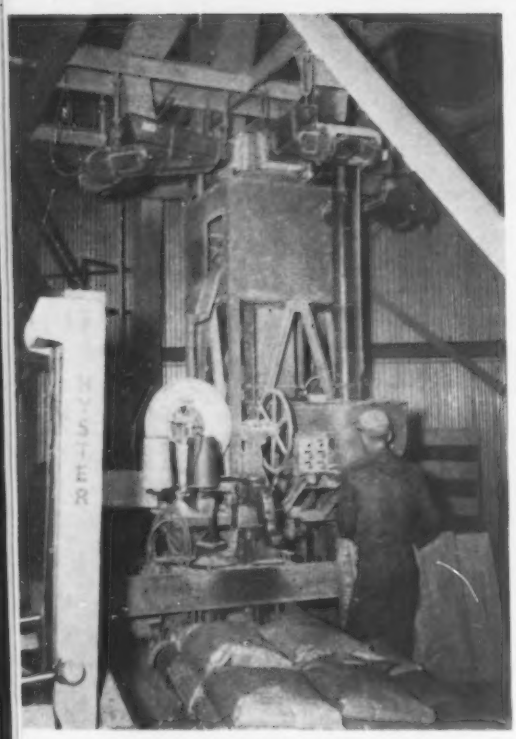
This sand, an almost unique material, runs 90 to 95 percent pure silica, with a hardness of 7. It is angular in shape and particularly suited for processing as blasting sand. It is sized mechanically by vibrating screens and hydraulically by a Wem-



THIS GENERAL VIEW shows the No. 1 (sand) plant and the No. 2 (fine-grinding) plant enclosed in the tall structure in the distance. A long, low-roofed building connects the two plants; it houses bag-filling machines and is the storage warehouse.

AERIAL VIEW of the new Dry Mix operations at Roseville, Calif. Unit 4, the latest plant to be erected, had not been built when this picture was taken late in the summer of 1960. Units 1 and 2 are connected by the long warehouse structure. Unit 3 is in the upper portion of the picture between the two large concrete slabs used for open storage of materials.

AT THE AGGREGATES PLANT of the Chevreaux Sand and Gravel Company near Auburn, Calif., (near the center of the picture) is the special sand department owned and installed by Dry Mix Materials Co. to supply its Roseville operation. It includes a multicompartment hydraulic classifying tank, dewatering screw classifiers, and five attrition scrubbers to produce the clean graded 6- by 50-mesh sand.



SPECIAL SAND produced in the No. 1 plant is packed in paper bags with machine-sewn closures. The packing operation is shown above.

The heart of the No. 2 (fine-grinding) plant is this disc-roll mill, which grinds and air-classifies high-grade clays for industrial and construction uses.

co Sand Sorter water scalper to extract a desired product in the 6- to 50-mesh range. It is then repeatedly scoured in a series of Wemco attrition machines (scrubbers) to yield a uniform, clean product. Wemco screw classifiers finally dewater the sand before stockpiling. From the piles it is trucked 30 miles to Unit No. 1 at the new Roseville plant.

**Blast and Filter Sand Plant** Unit No. 1, as previously mentioned, produces blast and filter sands. End products are sized within these limits: 6- by 8-mesh; 8- by 12-mesh; 12- by 20-mesh; 20- by 30-mesh; and minus 30 (30- by 50-mesh). The beneficiated Bear River sand is loaded into a 10-ton feed hopper, from which a Syntron feeder and bucket elevator feed a 4- by 40-ft. gas-fired rotary dryer. Temperature within the dryer is controlled automatically to 250 deg. F.

A 3- by 7-ft. air-swept rotary cooler follows the dryer. It also acts as an air separator to remove any minus 50-mesh material which may have been produced by attrition by the lifters in the dryer. Three vibrating screens, a 4- by 10-ft. double-deck Seco, followed by 4- by 10-ft. and 3- by 15-ft. Tyler Hum-mers size the sand to the desired limits. Circulation and delivery to the finished storage bins are by bucket elevators. Particle shape has dictated the use of square-mesh cloth on the primary (Seco) screen and slotted mesh on the two pulsating electro-vibrating Hum-mers, to attain highest screening efficiency.

One of the finished storage bins (300-ton capacity) supplies Hardy electronic weighing equipment at the bag packers. Two 200-ton 4-compartment bins load out bulk sands into trucks. Elevator boots and other critical points in the plant are under suction to a collector, to assure dust-free operation.

**Fine-Grinding Plant** Unit No. 2, the fine-grinding plant, produces a coarse grind, 200- and 325-mesh particle-size clays for varied industrial uses, principally foundries, building trades, and insecticide manufacturers.

The raw material comes from the noted clay deposits near Lincoln, Calif. It is sun-dried and crushed to minus 1½ in. prior to delivery by trucks to the Roseville plant. There it is stored in concrete bins before being carried by an 18-in. belt conveyor to a set of 12- by 36-in. rolls for reduction to minus ½-in. mill feed. Storage is in an 80-ton elevated bin which feeds a Hardinge No. 9 disc-roll mill.

A Hardinge volumetric belt-feeder regulates flow from the bin to the mill, speed being controlled automatically by a mercoid switch. Pressure differential between inlet and outlet air-piping of the mill is sensed to actuate the mercoid switch. Rapid pressure fluctuations are absorbed and sudden feed variations are minimized by the use of a time-delay switch on the feed-circuit panel. Ultimate entrance of the raw clay onto the grinding table of the mill is by screw conveyor, with rotary air-lock.

According to Mr. Oliver, the disc-roll mill is the only one of its type

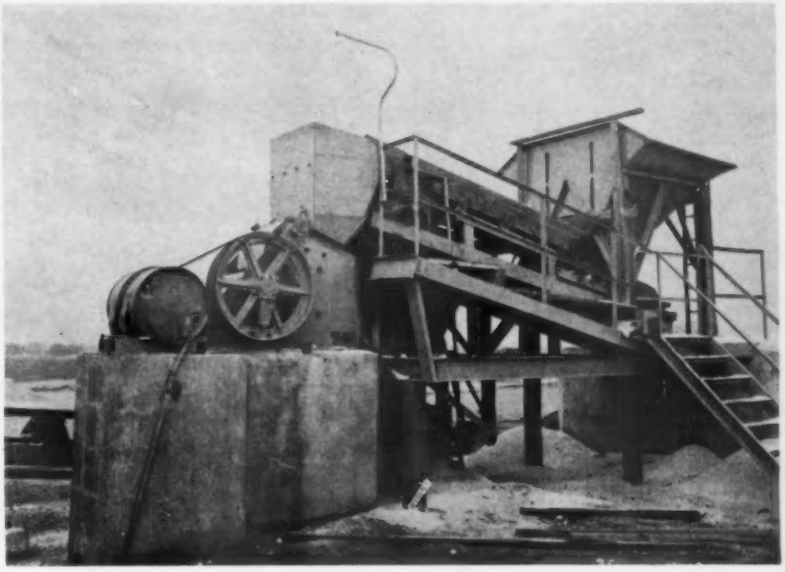
in the West. In design it represents an improvement of the Loesche mill originally developed in Germany. Grinding is done by two rolls riding on a horizontal disc, or table, which turns at relatively low speed. The clay is ground by the pressure of the rolls on the thin layer of material on the table.

Finely-ground material overflows a dam at the perimeter of the table, and high-velocity air blows up through angular louvres rotating with the table. Oversize, carried upward by the air, is deflected inward to return to the grinding table. The fines pass on up to the Gyrotor classifier section. In the cyclone the 200-mesh product drops to a storage bin, while the 325-mesh material returns to the suction side of the main fan. A vent line at the discharge end operates at slightly negative pressure to pick up the minus 325-mesh material and carry it to a Rees baghouse for collection. Black air packers are installed beneath the 200-mesh and 325-mesh product bins for bagging. Mill capacity is about 8 t.p.h. of finished product.

Because the raw clay is merely sun-dried, it contains up to 10 percent moisture; a Hardinge air heater has therefore been installed in the mill air system to reduce the moisture to about 2 percent. The heater is fired by a Maxon Premix burner using natural gas. Mill temperature is directly dependent upon the temperature of the mill vent, which is maintained at 170 deg. F. The complete heater system is controlled by a Minneapolis-Honeywell Protectovane and Protectoglo unit with automatic proportionality unit-control of the vent temperature. Temperature at the outlet of the heater is controlled to the maximum of 700 deg. F.

THE NO. 3 (CRUSHING) PLANT, where various stone products are crushed in two stages, then washed and sized on vibrating screens. Industrial quartz granules, decorative rock, and roofing materials are the chief products.

CRUSHING. This 8- by 24-in. jaw crusher in the No. 3 plant is fed from a short picking belt. Primary reduction is to 1½-in. top size.



**Industrial Minerals Plant** In Unit No. 3 a variety of industrial minerals—quartz, granite, etc.—are crushed, sized, and washed. The foothills east of Roseville contain many abandoned gold workings with tailings in which attractive, hard granite cobbles up to 8-in. diameter are found. These are hand-picked and trucked to Roseville for processing in Unit No. 3 plant. End-products include industrial white quartz; granite for roofing and driveway use; and colored rock, mostly red, for the roofing trades. Versatility keynoted the design of Unit No. 3, especially ease of rapid cleanout for product changes. Capacity is in the range of 50 t.p.h.

The arriving material goes to a hopper feeding a short 30-in. picking belt running to a 24- by 8-in. Kue-Ken jaw crusher. Primary crushing reduces to about minus 1½ in. The product is elevated to a 4- by 8-ft. single-deck Overstrom screen where 1½- to ¾-in. decorative rock is taken out.

Screen throughs advance to chokefeed a 36-in. Kue-Ken fine-mantle gyratory crusher. The product is

elevated 70 ft. and split-fed to a pair of 3-deck Overstrom screens equipped with washing sprays. Top-deck rejects return in closed circuit to the gyratory crusher, while the three sized products (½ by ¼ in.; ¼ by ⅛ in.; and minus ⅛ in.) are finished output. The two larger materials go directly to a 200-ton compartmented loading bin, while the lower-deck screen throughs and waste water pass to a 24-in. Wemco screw-classifier for dewatering prior to storage. A reclaiming belt loads out to delivery trucks.

PLANT NO. 4 is the latest addition to the Roseville multiplant operation. It was designed to turn out foundry materials, primarily a clay-sand-ganister mix used for lining cupolas.

**Blending Installation** Unit No. 4, newest in the multiplant complex at Roseville, was completed and went into operation in December, 1960. It is primarily a proportioning-blending-mixing set-up, which utilizes the products of the other three processing units to prepare foundry materials. Production of Ganite, a ganister-type compound used to line foundry cupolas, is the mainstay of the output. Molding and aerated sands, too, may be formulated.

A Scoopmobile charges the various minerals into six 15-ton bins feeding a traveling weigh-hopper from which a skip elevates to a Simpson muller. After the introduction of certain additives, or sometimes water, the mulled mix is aerated, then sized by an enclosed vibrating screen. Finished products are binned for bulk-loading into trucks or are weighed out by Richardson scales for bagging in open-mouth bags.

**General Data** About 75,000 sq. ft. of concrete slab is used for the storage of the numerous products. The slabs are divided into separate sections to avoid contamination. A 10,000-sq. ft. warehouse tying Unit No. 1 and Unit No. 2 plants together is used for storing bagged products. All material handling is held to the minimum by the use of pallets and fork-lift trucks. A portable conveyor stockpiles finished products on the slab. Murphy 60-ft. platform scales weigh out the loaded trucks. Precise control of the operations is exercised by means of a complete laboratory. Manpower is low, the four production plants, including the bagger operators seldom requiring more than 6 or 8 workmen. Robert K. Oliver, son of Boyd E. Oliver, president, supervises production and quality control. Design engineering of the plant complex was in the capable hands of the Arthur E. Howland Company, Los Angeles.

Dry Mix Products Co., the parent organization, has set up a well-knit distribution system during its ten years of existence, involving 35 distributors and about 2,000 dealers. Through this organization the company is able to sell at reasonable cost with nominal mark-up.

In the opinion of Mr. Oliver, the success secret of the combined operation lies in the fact that a distributor need not buy a single item in truckload lots, but can maintain a minimum warehouse inventory by combining various items, all produced at the one location in Roseville. Trucks constantly leave the plant loaded with two or three different sizes of blasting sand, fire clay, roofing rock, and other combinations of the miscellaneous items as processed.

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### N.B.C.A. Studies Raveling In Asphaltic Concrete

A research study of the problem of raveling of asphaltic concrete was announced by Charles R. Foster, co-ordinator of research, National Bituminous Concrete Association. It is the newest project in a long series of research studies to be initiated under N.B.C.A.'s $1,300,000 research program.

The purpose of the new raveling study is to develop a test that will identify asphalt-aggregate combinations that may ravel (lose their surface aggregate) in the first year or so after construction. Test results will then be projected on a scale so that a definite "number" relationship can be established which will identify a certain asphalt-aggregate combination as satisfactory or unsatisfactory from the standpoint of raveling.

The program of study on raveling will be undertaken for N.B.C.A. by the Texas Transportation Institute, located on the Texas A. and M. campus, College Station, Tex. Principal investigators in the work are Bob M. Gallaway and Rudolf A. Jimenez, both of Texas A. and M. College faculty.

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Headquarters of the American Society of Civil Engineers, effective September 5, will be at the United Engineering Center, 345 East 47th Street, New York 17, N. Y.



Enter 133 on card, page 183 →

**TWO ROCK MASTERS AND 900′ BLUE BRUTE COMPRESSOR . . .**

# HIGH FOOTAGE DRILLING TEAM

What makes the best drilling team? Is it maximum footage? Low fuel consumption? Lowest maintenance? It's all these and more.

Look at the Rock Master drill, for example. It has mobility to get around the roughest ground—to move the air compressor; maneuverability to spot the drill where you want it . . . quickly . . . accurately; stability to hold mast alignment for fast, accurate drilling; simplicity to provide long, trouble-free service; plus the WD-45 Heavy Duty 4½" Drifter for fast drilling.

In one side-by-side comparison the Rock Master put down 3.1 holes per hour. The competitive crawler drill put down 2.7 holes per hour. There's other proof, too, that the Worthington Rock Master can outperform any competitive crawler drill.

What about operation? It has easier, safer controls; a more powerful feed motor for faster steel changes; and an automatic line oiler that reduces maintenance.

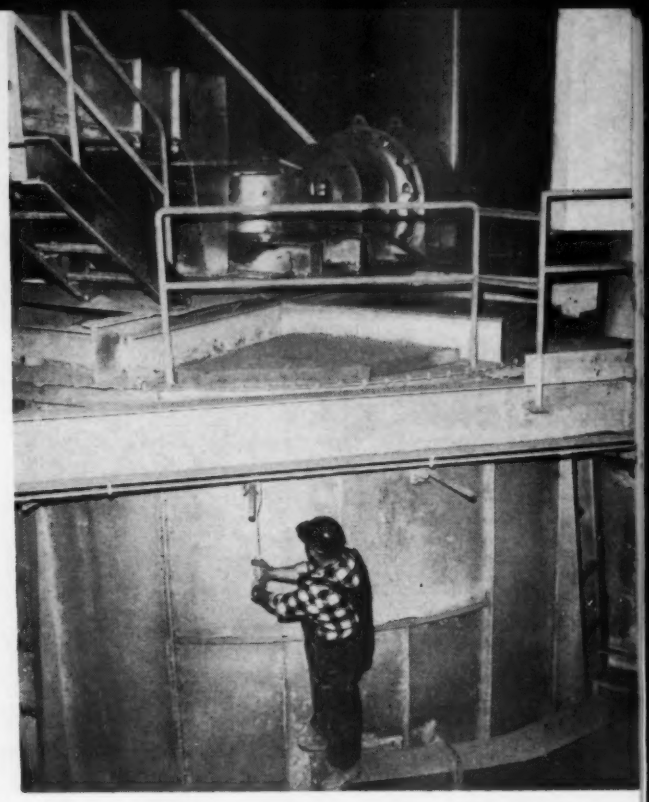
What about air consumption? The air consumption of the Rock Master is so low that you can easily operate two units from one 900′ compressor, as is being done on the job above. Or, one Rock Master can operate from a 600′ compressor with plenty of air to spare for boulder popping, running a bit sharpener, a dust ejector or even a blow pipe for cleaning holes!

For the large volume air supply, you can't make a better buy or rental than the Blue Brute 900′ Compressor. It's efficient —less fuel consumed at the end of the day. And it has all the ease-of-operation and safety features you'll ever possibly need.

To get more information on the Rock Master or on the Blue Brute 900′ compressor, call your Worthington rotary compressor distributor listed in the Yellow Pages. Ask him for a quotation, so you can see the Blue Brute drilling team in a truly competitive light. Or write Worthington Corporation, Dept. 61-1, Holyoke, Mass. In Canada, Worthington (Canada) Ltd., Brantford, Ontario.

WORTHINGTON

PRODUCTS THAT WORK FOR YOUR PROFIT



This 18-ft. air separator is handling over 350 bbl. per hour at the Huron Portland Cement Company's Alpena (Mich.) mill. The operator is making adjustments which will effect ultimate particle distribution and size.

# Huron's New Mill With 18-ft. Separator Produces 350 Bbl. of Cement per Hour

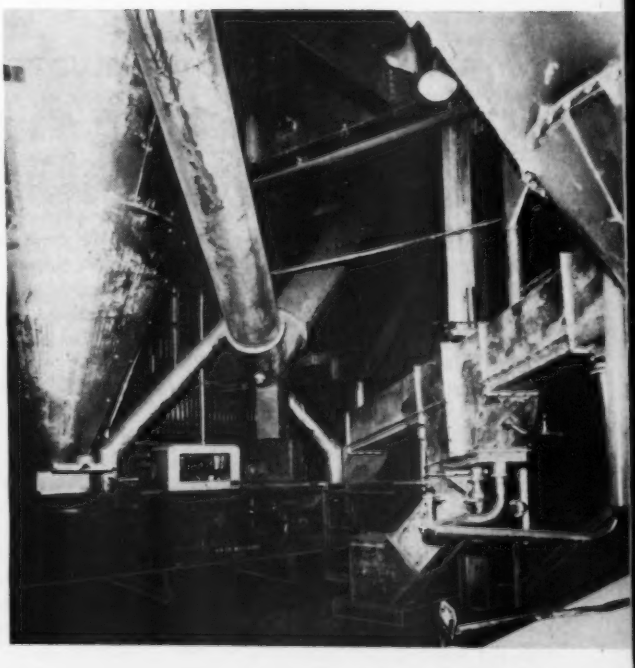
HURON Portland Cement Company's plant at Alpena, Mich., is the world's largest single cement plant—a 12,000,000-bbl. per year plant which operates its mills eight months a year and its kilns around the year preparing the clinker for finishing. Kiln capacity is 30,000 bbl. a day, and finished cement capacity is 52,000 bbl. a day.

The apparent gap is filled by a 2,500,000-bbl. clinker storage area, which stores the clinker during the cold winter months when Huron's cement-hauling ships are ice-locked. Finished cement storage capacity is 1,050,000 bbl.

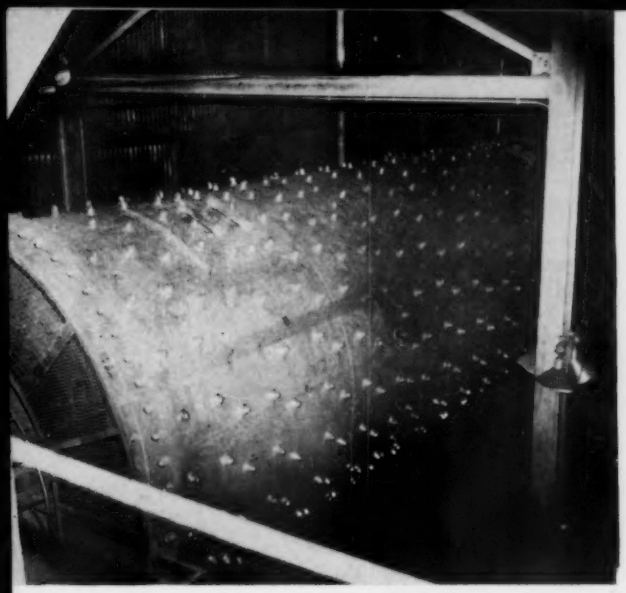
The most recent of several major process innovations made and production efficiencies achieved since Huron became a subsidiary of National Gypsum Company is the installation of a new finishing plant with a rated capacity of 325 bbl. an hour but which has been producing more than 350 bbl. an hour since it went on stream successfully last fall.

Limestone comes from quarries a few hundred yards from the cement plant. Shale is shipped in by rail from facilities nearby. Thirteen raw grinding mills (nine 7X26 tube mills with 14-ft. air separators and four 10½X15 mills with 16-ft. separators) reduce the material to 90 percent 200-mesh.

Sixteen Bradley mills grind finished product; three grind raw clinker. Nineteen separators, ranging from 14 to 18 ft. in diameter, finish the classification job. The newest and largest mill—No. 19—a 2750-hp., 12X36 tube mill, is using 215 tons of grinding balls. The 2-compartment mill, which was designed by Kennedy-Van Saun to turn out 325 bbl. an hour, feeds an 18-ft. Sturtevant air separator. The manufacturer guaranteed the unit at that rate, although there was no previous



A view of the feed system for the No. 19 Compeb Mill. At the right is the 18-ft. air separator.



Above: The two-compartment 12x36 mill (No. 19), which has a 215-ton ball load and is driven by a 2,750-hp. motor.

Right: The push-button control room for No. 19 mill, the largest and most modern finishing mill at the Alpena plant.

experience with such high rates in an 18-ft. unit. This separator, driven by 250 hp. (of which Huron so far has drawn only 225), thus far has taken whatever it has been fed.

Huron estimates that the mill—presently one of the world's largest—produces 350 bbl. per hour. This is the present "average" and "normal" operating capacity for mill No. 19. One 24-hour run gave a 416.2 bbl. per hour average; a 22-hour run produced an average of 410.2. Generally, the figures hovered in the 70-t.p.h. or 370-bbl. per hour range—without drawing full horsepower for the classifier.

The finishing mill receives its 66 to 70 t.p.h. feed (maximum size, 2 in.) and reduces it. The first compartment is charged with 36 percent internal mill volume of balls. Of these media, 1.4 percent are 4 in. in diameter; 7 percent are 3½ in.; 43.3 percent are 3 in.; 31.2 percent are 2½ in.; and the remainder are smaller. In the second compartment, 34.6 percent are 1¼ in.; 37 percent are 1 in.; the remainder are smaller. Thirty-five percent of the internal volume of the second compartment is grinding media.

The result is a product close to 75 percent minus 200-mesh; less than 5 percent plus 100; 7.7 percent minus 100 plus 150; 12.5 percent minus 150 plus 200. This is the Sturtevant air separator feed, which enters the separator.

Using about 225 of its horsepower to drive the pinion shaft at 500 r.p.m., the separator takes the feed and passes it through 30 selector blades which are 2 to 2½ ft. long and tapered from 10½ in. to 1 ft. These plate-mounted blades whirl the feed in an even, horizontal spray; and the overhead fan, with 12 3½-ft. blades, sucks up the desired fines, centrifugally knocking away any large particles that might otherwise escape with the desired cement fines. Simple adjustments allow exact regulation and control of both centrifugal force and air currents, one counteracting and overbalancing the other, and ultimately expelling the desired fines through one conical outlet and passing the oversize through another for recycling.

The cement fines leave the separator at a temperature of 160 to 200 deg. F., having undergone both temperature increase through attritional heat, and ambient air cooling *via* cooling ducts (usual range of cooling temperature, 15 to 60 deg. F.) during the classification process. (Studies now are under way to effect further cooling during the few extremely hot summer days.) The fines thus separated are 88 percent through 325-mesh and test 1650 on the Wagner scale.

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The second Industrial Building Exposition and Congress will be held at the New York City Coliseum from September 25 through 28. Problems involved in new industrial construction or modernization of existing facilities will be discussed, and information on them will be available at the sessions and show.

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Luther H. Hodges, Secretary of Commerce, broke ground recently for the new National Bureau of Standards laboratories at Gaithersburg, Md. The ceremony marked the initial construction phase for a $104 million 20-building research facility which will permit complete relocation of the bureau from Washington to the 555-acre site in Montgomery County.

# BIG PERFORMANCE... LOW MAINTENANCE WITH PINNED-DOWN STABILITY

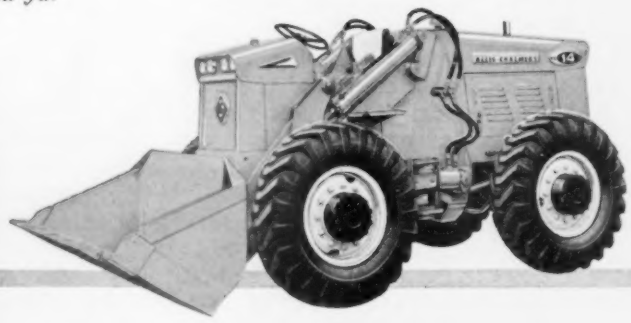
**Allis-Chalmers tractor loaders feature axles that are pin-connected to the frame with thick steel pins . . . not automotive-type U-bolt connections. Tractor loaders stay on the job . . . not in the shop.**

Pinned-down stability—that's what you get in Allis-Chalmers tractor loaders. Axles on these units are pin-connected to the frame with thick steel pins . . . not lightweight U-bolt connections. There's no rolling or shifting under load . . . no grief with bolts working loose . . . or mounting plates warping out of shape.

Pin-connected axles keep Allis-Chalmers loaders on the job . . . not in the shop. There's far less downtime due to annoying axle problems. You'll also profit from: *extra stability* from a longer wheelbase to length ratio; *single-lever control* of all speed and direction movements; *five-way hydraulic filtering* for safe, efficient operation; *well-located dump cylinders* that are up and away from dirt and *high lift—long reach* for fast, easy loading cycles.

See Allis-Chalmers loaders in action. Be convinced that these units can bring you extra earnings on all excavating and loading work. *Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.*

*Allis-Chalmers offers 6 tractor loader models—ranging in power from 76.5 to 184 horsepower—in carry capacity from 3,600 to 10,500 lb and with buckets available from 1 to 6 cu yd.*



*STEP UP YOUR*

**P**erformance
**O**perator comfort
**W**earability
**E**ase of maintenance
**R**eliability

WITH **ALLIS-CHALMERS**
*POWER FOR A GROWING WORLD*

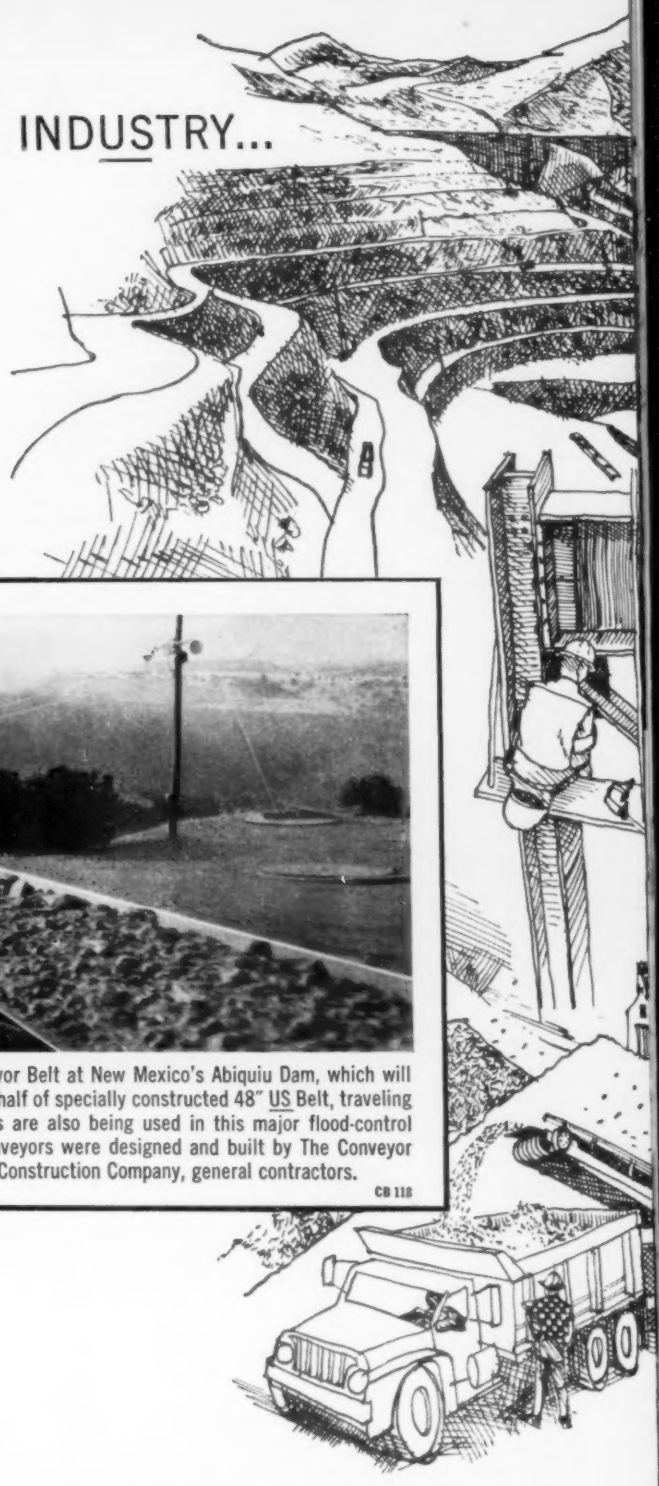
Enter 136 on card, page 183

ALLIS-CHALMERS
14

# AT THE HEART OF INDUSTRY...

**60,000 tons of material a day** are being carried by a US Conveyor Belt at New Mexico's Abiquiu Dam, which will be the fourth highest earth-fill dam ever built. More than a mile and a half of specially constructed 48" US Belt, traveling at 800 fpm, is used on this single conveyor. Other, wider US Belts are also being used in this major flood-control project to carry the more than 15,000,000 tons of fill required. Conveyors were designed and built by The Conveyor Company of Los Angeles in conjunction with US engineers for Mittry Construction Company, general contractors.

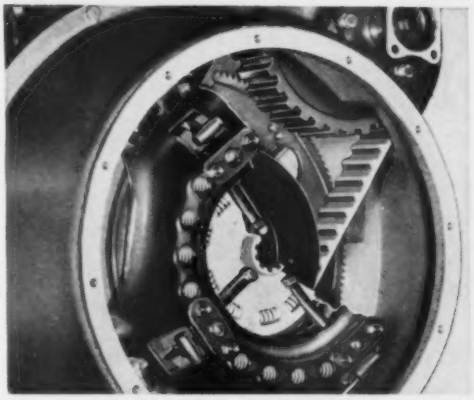
CB 118



**Wherever the mining or construction industry operates,** you'll find U.S. Rubber products adding their "muscle" to the job...making it easier, more efficient, more profitable. As the world's largest producer of Industrial Rubber Products, US knows the needs of mining and construction men everywhere.

**6 U.S. Pilot© Pipes pump 5,000 gallons of water** per minute at a Minnesota taconite mine. The pipes lead from a barge pump to two concentrators. Rubber pipes were essential, for during pumping the barge may rise or drop 10 feet, straining hose and connections. Despite its flexibility, this pipe is extremely strong . . . takes 250 lbs. pressure.

M 110



**The revolutionary new flywheel power take-off** on Reo's transit-mix truck relies on a U.S. PowerGrip "Timing" Belt for the positive, smooth, direct, and even-flowing power essential to its success. The "Timing" Belt does away with a separate engine or front-end take-off, eliminates the need for lubricants, allows a payload increase of more than 600 lbs. per trip.

TB 106

**Now US brings another major development** to conveyor belting—the WeatherGard cover. In recent tests this cover was unharmed by 7 times the ozone torture that causes ordinary belt covers to crack and fail. What's more, the WeatherGard cover has much greater resistance to cracking from accelerated aging, has outstanding resistance to abrasion, wear, and weather.

CB 119

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Mack-drawn hoppers at the pit are loaded with 25 tons of aggregate. They haul steadily on 9-hour shifts.

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*Enter 140 on card, page 183*

At American's Ft. Jefferson ready-mix plant Mack mixer units take on 6-yard loads of concrete for local delivery.

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# Moving big tonnage for American Aggregates Corp.

Throughout the Ohio Valley, the Mack trucks of American Aggregates Corporation are a familiar sight. In addition to being the country's largest sand and gravel suppliers, the company manufactures diverse products ranging from ready-mix concrete to electrical equipment. These broad operations have one thing in common—a reliance on Mack trucks and tractors to handle the many and varied hauling assignments.

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American Aggregates' Ft. Jefferson sand and gravel operation is a model of efficiency. Bottom dump trailers hauled by Mack B60 series tractors, run 25-ton loads of aggregate over well kept haul roads from pit to processing plant on a 9-hour-a-day schedule . . . average nearly a quarter of a million tons a year. After processing the aggregate, Mack dumpers make deliveries to customers and to American Aggregates' big ready-mix operation where 6-yard Mack mixer units handle concrete deliveries.

Modern, efficient, high-volume operations like these depend on modern efficient equipment to keep operating costs low. Macks contribute to high efficiency because of their outstanding performance characteristics. Mack Thermodyne® gasoline and diesel engines provide plenty of power for fast get-aways under full loads. Traditional Mack construction throughout reduces downtime and maintenance.

These are basic reasons why Macks are first choice where profitable operations rely on truck performance . . . why a Mack will pay for itself again and again by delivering top work capability per dollar invested. Your Mack representative is qualified by knowledge and experience to help you determine the Mack models that most economically meet your trucking needs. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

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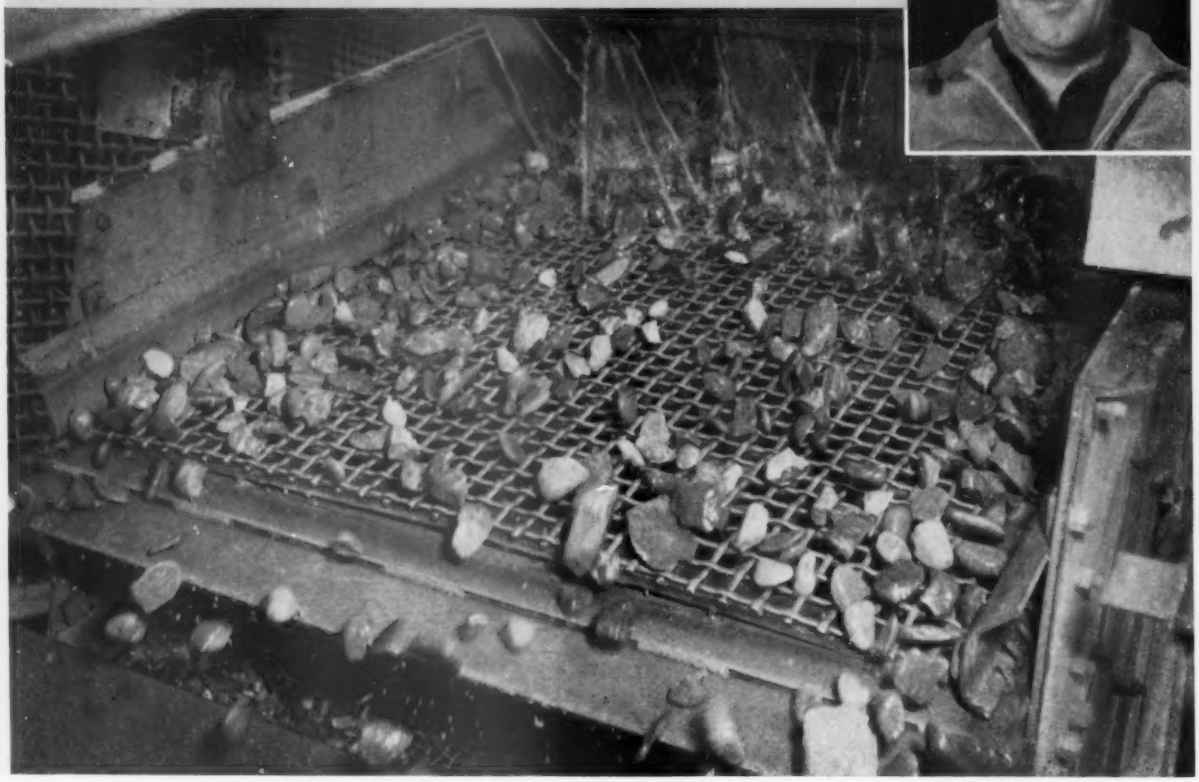

"In the past year and a half, since putting SECO TWIN BEARING SCREENS on the job, our production capacity has increased so much that we had to open up the feed to take the increased loads. And during this time, there has not been a single minute of downtime.

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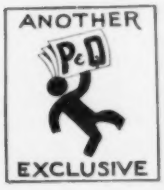
# Legal Decisions

## *On Industry Problems*

By **LEO T. PARKER**

Attorney at Law
Cincinnati, Ohio

### Fifteen Percent Depletion




MODERN higher courts consistently hold that it was the congressional intent in listing the allowable depletion for various minerals by name to connote to such terms their commonly understood commercial meanings. In the case of quartzite there can be little doubt that the "common understanding" of what that mineral is varies greatly according to locale, use, and expert definition. There are over thirty definitions of the mineral, each springing from an authoritative source. Hence, the higher court must carefully consider all evidence before rendering an opinion in a given case.

For instance, in *Commissioner of Internal Revenue* v. *Quartzite Stone Company,* 273 Fed. (2d) 738, the testimony showed that the United States Tax Court held that the Quartzite Stone Company was entitled to deplete the natural deposits quarried at the rate of 15 percent for federal tax purposes. The Commissioner of Internal Revenue appealed to the higher court to decide whether the Tax Court correctly determined that Quartzite Stone Company's mineral deposit was quartzite within the meaning of Section 114 (b) (4) (A) (iii), the Internal Revenue Code of 1939 (26 U.S.C., 1952 Ed. page 114). It was the Commissioner's opinion that the deposit was subject to but 5 percent depletion allowance as stone under Sec. 114(b) (4) (A) (i).

It was agreed that the deposit is sedimentary in nature, contains between 60 and 65 percent silicon dioxide; 20 to 30 percent calcium carbonate; 0.03 to 1.84 percent aluminum oxide; up to 1.15 percent iron oxide. It is cemented with calcite so securely that the mineral will break, when fractured, as easily through the grain as through the cement. Many eminent petrographers do not accept the deposit as quartzite because the mineral classically has been defined as a metamorphic, silica-cemented sandstone containing at least 95 percent silicon. Quartzite meeting the requirements of this definition would be suitable for use as a refractory.

It is interesting to observe that the higher court upheld the United States Tax Court to the effect that the Quartzite Stone Company is entitled to deplete deposits quarried at rate of 15 percent for federal tax purposes, rather than at rate of only 5 percent as contended by the Commissioner. This higher court went on to explain that as the Quartzite Stone Company's deposits had been accepted as quartzite by the construction industry, the company had marketed the deposit as quartzite for a great number of years, and large buyers had ordered the mineral as quartzite, the Tax Court properly determined that the mineral should be classified as quartzite for tax purposes. This court said:

"The issue is not what the defined and end limitations of the mineral are but rather whether taxpayer's (Quartzite Stone Company's) particular deposit is quartzite. We believe it to have been the intent of Congress to have used the term quartzite in an unrestricted sense and to have set a 15 percent depletion allowance whenever the mineral was accepted commercially as quartzite. Taxpayer's (Quartzite Stone Company's) deposit has been so accepted by the construction industry. For a great number of years the taxpayer has marketed the deposit as quartzite. Large buyers such as the Union Pacific Railroad have

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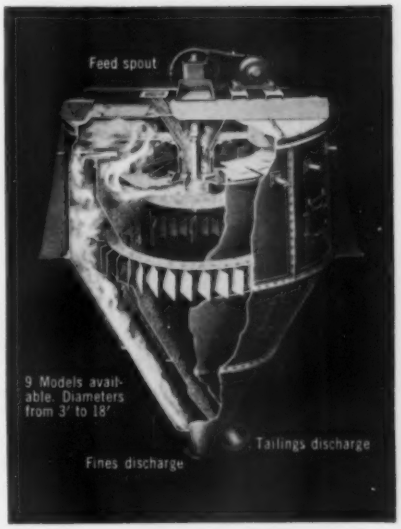


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ordered the mineral as "quartzite," and accepted the product as such. Under such circumstances we hold that the Tax Court properly determined that the mineral should be classified as quartzite for tax purposes."

### Price Fixing Illegal

Last month a higher court rendered a decision which apparently answers a legal question presented by a reader. This question is: "If two contracting parties sign a contract which clearly obligates both the contracting parties, can either party breach his contract and avoid liability?"

The answer is yes, if either party violates any valid laws. This is so because contracts are usually entered into by businessmen with the purpose that they shall be performed, and there is an implied agreement that each party shall exercise good faith in trying to carry them out. Without good lawful faith such a contract is automatically rendered void. This rule of law is particularly true in price fixing.

For illustration, in *Meigs* v. *Empire Petroleum Company,* 273 Fed. (2d) 424, the testimony showed facts, as follows: One Meigs was a broker located in Madison, Wis., and sold paving asphalt cement used in the construction of county, state and federal highways. Meigs sold approximately 60 percent of the paving asphalt used by the highway contractors in Wisconsin.

The Wisconsin Oil Refining Company entered into an agreement with Meigs whereby the latter was the sole distributor of all asphalt cement it produced in Wisconsin, with the exception of purchases in ten listed counties. Wisconsin Oil Refining Company was merged with the Empire Petroleum Company.

Later Meigs, the officials of the Empire Petroleum Company, and the Wisconsin Oil Refining Company signed a contract which in part provided that if the parties were unable to make a contract for the following year Meigs would pay the Empire Petroleum Company $39,000.00, which amount was involved in a recent disagreement between the parties.

The important point is that Meigs and the Empire Petroleum Company did not make a contract for purchase of paving primarily because officials of the Empire Petroleum Company insisted that the contract contain a price-fixing paragraph in violation of both Wisconsin and federal statutes.

In subsequent litigation, the higher court held that Meigs need not pay $39,000.00 to the Empire Petroleum Company and said:

"The paragraph in question was a violation of the Wisconsin statutes. It has been held too often to require elaboration now that price fixing is contrary to the policy of competition underlying the Sherman Act and that its illegality does not depend on a showing of its unreasonableness, since it is conclusively presumed to be unreasonable. It makes no difference whether the motives of the participants are good or evil. To permit the plaintiff (Empire Petroleum Company) to recover in this action would be unconscionable, unreasonable and unjust. Plaintiff did not negotiate in good faith as it was obligated to do."


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Pneumatic power unit manufacturers use and recommend "NR" grades of NON-FLUID OIL on their equipment to insure top power and operating efficiency. Hundreds of major pneumatic power unit users insist on "NR" grades as their lubricant.

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# Performance records prove International® best buy!

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**NEW UD-817 BACKS VETERAN IH DIESELS ON MULTI-CRUSHER SETUP FOR PLAUTZ BROS., WILLARD, WISCONSIN**

**Take a look at performance records** when you choose power for heavy-duty crushing operations. That's what the Plautz Brothers did, then they bought another International! They checked 27 years of outstanding service—12 years from an International UD-24, and 15 years from an International UD-18. In all that time, the "24" had one part replacement, and the "18" needed a valve job.

**The new 250-hp UD-817** supplies power for the first conveyor and the primary crusher, a Universal Breaker that takes 30-inch rock. Next in line is a Pioneer 20 x 36 jaw crusher driven by the 15-year old UD-18. Final unit is a Pioneer triple-deck 40-inch roll with a 4 x 10 screen, driven by the 12-year old UD-24. The plant produces 1,000 yards of 7/8-inch material per 10-hour day.

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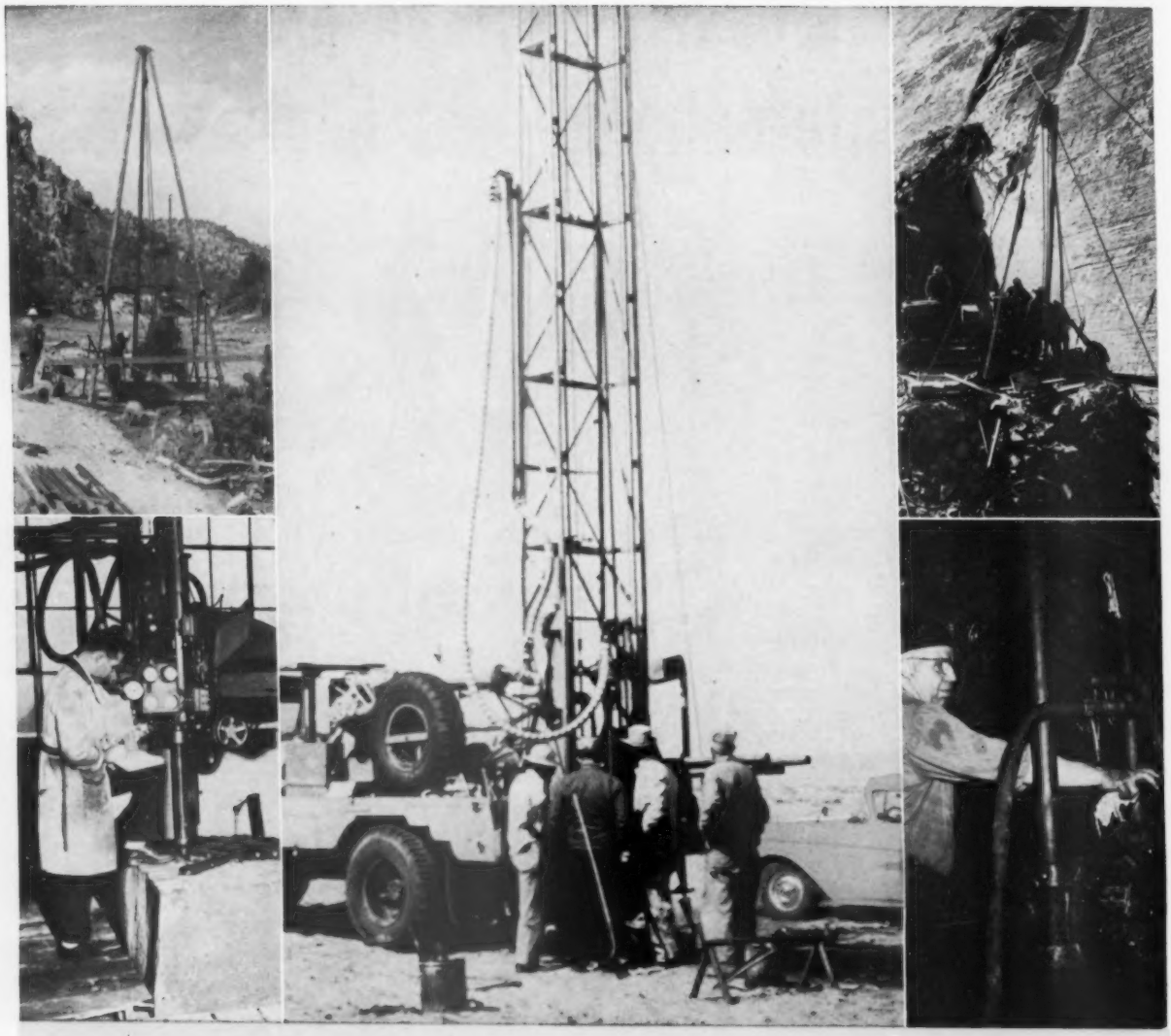

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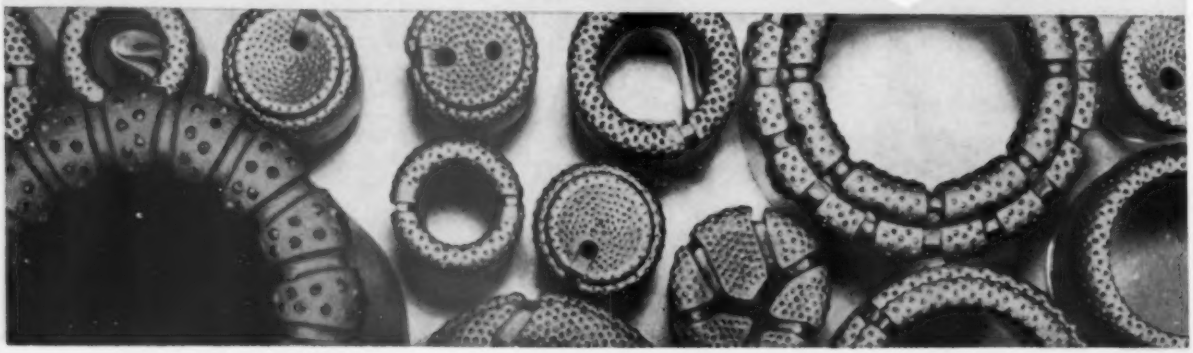

For comparison, see *State* v. *Retail Dealers Ass'n,* 256 Wis. 537. This court held that a combination to fix the retail price of gasoline is a violation of the law. In this case the dealers in the association did not enter into a contract to fix prices but the association only circulated a bulletin urging the dealers to "sit tight" on present prices.

In *State* v. *Lewis,* 230 N. W. 692, the court condemned as a violation of the law an agreement between a minority of the dealers of a city and a wholesaler, whereby the dealers received a discount on the price of merchandise by purchasing exclusively from the wholesaler.

### Liable for Concrete Burns

A reader asked: "If the buyer of concrete suffers burns while spreading it can he recover damages from the seller of the concrete?"

The answer is yes, if the testimony shows that the buyer was inexperienced in working in concrete, that he explained to the seller, or its agent, the intended use of the concrete, and the latter gave the buyer no warning or advice.

For example, in *Simmons* v. *Rhodes,* 284 Pac. (2d) 813, the testimony showed that a man named Simmons was inexperienced in using concrete. Shortly after laying the foundation for a new home he was building he met one Aydelotte, a salesman for Rhodes Company which sells ready mixed concrete. Aydelotte solicited the sale for Simmons' basement. Simmons agreed to buy, leaving the type of mixture up to Aydelotte. One morning Rhodes delivered its first load of mixed concrete to Simmons. In order to reach the basement area the cement was poured down a chute through a window opening and into the basement forms.

In later litigation Simmons also testified that he had never seen anyone use rags and padding on their legs to protect them from the cement or concrete. No one had ever warned him of the danger of getting burned by cement or concrete. Simmons worked leveling the cement floor for 3 to 4 hours. During this period his knees and legs were in contact with the wet cement. Shortly thereafter Simmons began to notice a "tingle" on his legs which became increasingly irritated. He continued to work, however, because of the necessity of leveling the floor before the concrete set. Two days after the exposure to the concrete Simmons' temperature reached 103 degrees. It was then discovered that he was severely burned. Extensive skin grafting operations were necessary. Simmons was hospitalized for nearly two months.

Simmons sued Rhodes Company, seller of the concrete, for a large amount of damages.

Although the lower court held Simmons not entitled to recover damages the higher court reversed the verdict, and said:

"There can be no reasonable doubt that plaintiff (Simmons) made known to the agent of the seller (Rhodes) the particular purpose for which the goods were required. It is also a reasonable inference that plaintiff (Simmons) relied on the seller's skill and judgment to pick the proper type and mixture of cement for the flooring. The retailer, even though not equipped to test a product, is under


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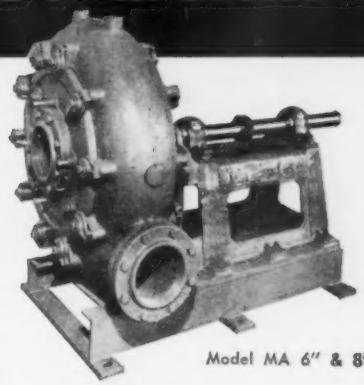

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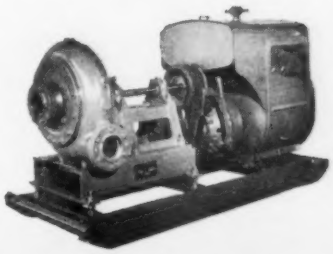
**Compact Design... Rugged Construction**

**LIGHTNING Model MA handles large quantities of sand and gravel economically, up to a total head of 100'. Simple design makes it easy to maintain close internal clearances. Rugged construction withstands the shock of large solids passing through. Large, clean passages insure maximum and continuous delivery.**



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Close coupled with V-belt drive. Either pump or industrial gasoline engine may be removed from the structural steel base for separate use. Model MA pump is light in weight and compact, for easy handling.

*"Sixty years of service to the sand and gravel industry." We offer a complete line of pumps including rubber-lined and new ceramic-lined models. Write for complete information.*

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an absolute liability to his customer for the implied warranties of fitness for proposed use and merchantable quality, including a warranty of safety of the product."

### Law of Depletion

Considerable discussion has arisen in the past over the proper and lawful percentage gross income deduction for depletion of natural mineral deposits.

In the late case of *Idaho Portland Cement Company* v. *Tax Collector of the State,* 357 Pac. (2d) 654, the higher court held that under the 1931 Property Relief Act of Idaho, the basis on which depletion was to be allowed in respect to metal mines, sulphur mines and deposits, and oil and gas wells was the percentage of the gross income, but that the basis upon which depletion was to be allowed in respect to any other property was the cost of the property, if acquired after July 30, 1931, or its fair market value if acquired before that date. Therefore, the Idaho Portland Cement Company was entitled to a deduction from its gross income for depletion on basis of cost, of the fair market value of calcium carbonate deposits, but that it was not entitled to a deduction for depletion on the basis of percentage of the gross income. This court said:

"While the parties stipulated that calcium carbonate, with additives, is used in the manufacture of portland cement and has no market value when excavated in the form of the crude mineral product, nevertheless, it is not contended that the company's property holdings of calcium carbonate deposits do not have value, or that the company is not entitled to depletion on the basis of cost, or fair market value, of such property."

### Not Major Deviation

The law has been generally established that if a truck driver effects an injury while deviating from or disobeying his employer's instruction, the employer is automatically relieved from damage liability to the injured person. Last month a higher court considerably varied this usual law. This court held that the employer is not always relieved from liability for injuries caused while a truck driver is deviating from or disobeying his employer's instructions.

For instance, in *Mayflower* v. *Star Block Company,* 170 N. E. (2d) 861, it was shown that a company's customer ordered material to be delivered to him. The company's official ordered the truck driver to deliver materials beyond the curb. The driver was requested by the customer to deliver the materials inside his garage and after some discussion the driver backed in the driveway. After some difficulties, the load was dumped in the garage. This the truck driver did so absolutely against his employer's instructions. In doing so an injury was effected.

The legal question presented the court was whether failure of the driver to abide by his employer's instructions relieved the company from liability.

It is interesting to note that the higher court held the company liable in damages for the injury, saying:

100'x24" Stacker is one of four Kolman Stackers used in the production of aggregate at Squaw Valley, California, in preparation of roads and site for the 1960 Winter Olympic Games. Stackers in the background are 70'x24".

**PNEUMATIC-TIRED STACKERS IN LENGTHS UP TO 150 FEET**

Reports of outstanding performance by the Kolman Model 101-R Radial Stacker are rolling in from all parts of the country. Owners are enthusiastic about bonus features offered by the Kolman Stacker — features like cable suspension of the boom, two-position wheels, balanced electric drive on the head section, power lift, power travel, and cam hinge. Sizes up to 150 feet long build larger stockpiles with a single setting.

MINIMUM SEGREGATION

Kolman's cable suspension design eliminates the segregation encountered with stackers having fixed discharge heights. By raising the stacker as the pile is built, the fall of material is kept at a minimum.

MAXIMUM PORTABILITY

Even the largest Kolman Stackers are on dual pneumatic tires that roll easily on any level surface. Wheel assembles are mounted in quick-change frames to easily shift from radial arc position for stacking to parallel position for moving from one location to another in the stockpile area.

150'x30" Stacker shown includes electric power lift and electric power travel for finger-tip control of stacker discharge position.

100'x24" Stacker in the background stockpiles sand produced with an 8'x48" double-deck vibrating screen on a Model 101 Kolman Portable Conveyor-Screen Plant.

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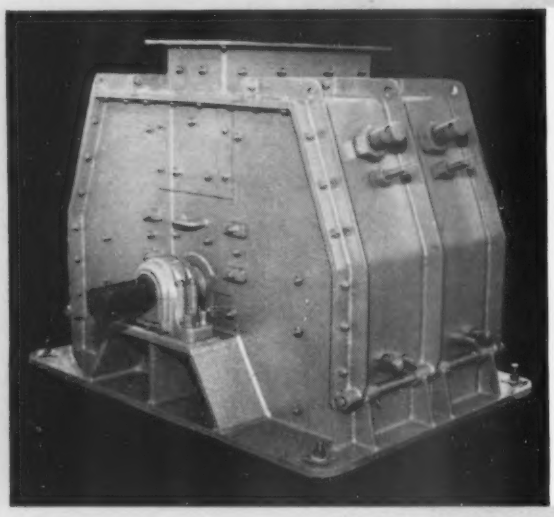

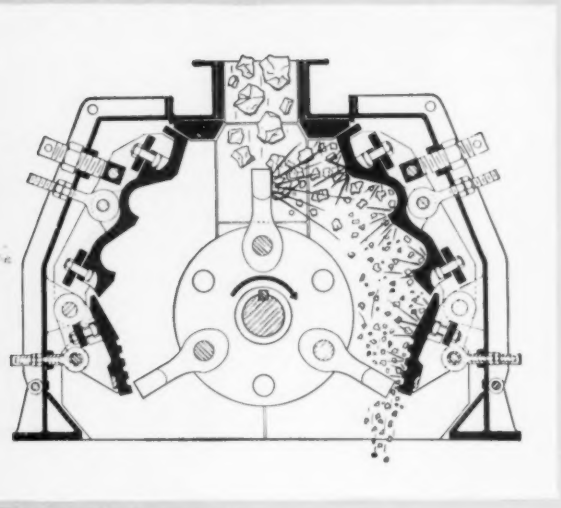

● Pennsylvania 7-38 Fine Reduction Reversible Impactor. Note "double impact" action in cross-section drawing.

Because of "double impact" action —in which stone is crushed by repeated impact back-and-forth between hammers and breaker blocks —Pennsylvania Fine Reduction Reversible Impactors can produce for you a well-graded, fine cubical product . . . at *profit-making costs.*

Note, also, these other unique cost-saving features:

**ADJUSTABLE BREAKER BLOCKS**—Both upper and lower breaker blocks are adjustable. Permits maximum control of circulating load and product gradation.

**LESS WEAR**—Longer life for hammers and breaker blocks built of cast alloy steel. Side liners, heat-treated carbon steel.

**EASY ACCESSIBILITY**—Entire breaker block assembly swings back, exposing rotor assembly for quick inspection.

**IDENTICAL REDUCTION**—Position of breaker plates and feed chute results in identical reduction when crusher is run in either direction.

**LOWER MAINTENANCE**—Rotor reversal balances wear, eliminates hand turning of hammers, saves labor and parts.

**LET US "PROVE IT"**

Send us 100 lb. sample of your material—and specifications for the finished product you want. At no obligation or expense to you, we will run tests in our laboratory and give you the results and recommendations.

**FREE BULLETIN**

Your Pennsylvania Engineer will be glad to discuss these crushers with you . . . or write for free bulletin.

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BATH IRON WORKS CORPORATION
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PENNSYLVANIA CRUSHERS

BATH-BUILT

"Who would contend that an employer could limit his liability in an accident merely by ordering his employee . . . To do so would be to virtually eliminate all liability on behalf of the employer, leaving anyone damaged to rely on the driver alone. We cannot believe that there was anything in this case of a major deviation as to absolve the employer."

### Not an Insurer

Last month a higher court held that it is the duty of a quarry company to use reasonable care to have its premises reasonably safe for invitees, but it is not an "insurer" against any sustained injuries.

For illustration, in *Robinson* v. *Fort Dodge Limestone Company,* 106 N. W. (2d) 579, the testimony showed facts, as follows: The Fort Dodge Limestone Company quarries limestone and stores it in piles on its premises.

One day a truck owner named Robinson went to the quarry to haul a load of limestone to be used for a driveway. Robinson parked his truck with the back end about 15 ft. from the pile of limestone. In loading the truck a quarry employee ran the scoop of a loader into the base of the pile. Robinson's leg was crushed between the metal scoop and the limestone, and broken. On the trial the jury returned a verdict for Robinson of $35,000.00 damages.

This verdict was rendered in view of Robinson's contentions that the officials of the Fort Dodge Limestone Company were negligent (1) in failing to give warning of the dangerous condition of the premises and also (2) in not warning Robinson of the danger that existed.

The Fort Dodge Limestone Company appealed to the higher court which reversed the jury's verdict on the grounds that although the Fort Dodge Limestone Company owed a duty to Robinson to provide him with a reasonably safe place, but nevertheless its failure to so provide will not make it liable, under all circumstances.

To put it in other words, Robinson had a legal duty to use reasonable care to protect himself against the injury, notwithstanding negligence of officials of the Fort Dodge Limestone Company.

### Lowest Bid Not Accepted

An official of a concrete contracting company asked: "If I submit a bid for concrete work in response to an advertisement for bids is the property owner bound to accept my low bid?"

A recent higher court decision answered this legal question in the negative.

For example, in *Grande Company* v. *Beach,* 102 N. W. (2d) 125, the testimony showed that Beach advertised for bids for certain work. In response to this advertisement for bids a company submitted a bid to do the work for $25,500.00. Beach rejected the company's bid and accepted the bid of another contractor to do the same work for $25,870.00. The company brought suit against Beach for damages on an alleged breach when Beach failed to accept the company's lowest bid.

It was argued by officials of the company that since it submitted the lowest bid, and furnished the required bond, a contract impliedly

**DETACHABLE ROCK BIT GRINDER CUTS DOWN-TIME – LENGTHENS BIT-LIFE**

BLOUNT machine-sharpens carbide-tipped rock drills far more accurately than any operator, however skilled, can by hand — and up to five times faster!

When you recondition your rock bits on a BLOUNT GRINDER, you can be sure of a uniform, symmetrical grinding job, including the exact angles the manufacturer intended.

Put a BLOUNT GRINDER to work for you, and get the savings so many customers report!

- ★ Longer bit-life — more regrinds per bit
- ★ Faster drilling
- ★ Reduced drilling upkeep
- ★ Lower cost per foot of drilling

**PARTIAL USER LIST**
***Blount Bit Grinders:***

National Asbestos Mine Company, Quebec
Peter Krewit Sons Company, Oregon
Liberia Mining Co., Liberia, W.A.
Stockbridge Stone Co., Georgia
Quebec Cartier Mining Co., Quebec
Orinoco Mining Co., Brazil
Tata Iron & Steel Ltd., India
Marquette Iron Mining Co., Michigan
Oroville Project Contractors, California
Inspiration Consolidated Copper Co., Arizona
Quebec Hydro Elec. Com., Quebec

**J. G. BLOUNT Co.**
Everett 49, Massachusetts
Div. Bowl-Mor Co., Inc.

*Enter 151 on card, page 183*

FOR DEPENDABILITY
PLUS ECONOMY
REPLACE WITH
INDIAN BRAND

Get the most out of your present equipment. When you need replacements, remember we started in 1913 to build our reputation in the Manganese Steel field for dependability plus economy.

Insist on
INDIAN BRAND
MANGANESE STEEL

Shovel Dippers • Dipper Teeth
Shovel Treads
Crusher Jaw Plates
Mantles • Concaves
Bowl Liners • Roll Shells
Pulverizer Hammers
Grate Bars • Breaker Plates
Ball Mill Liners • Screen Plates
Misc. Manganese Steel Castings

THE FROG, SWITCH AND
MANUFACTURING COMPANY
Carlisle, Pennsylvania • Established 1881

*Enter 152-A on card, page 183*

resulted and that failure of Beach to accept this lowest bid constituted a breach resulting in damages.

The higher court refused to hold Beach liable in damages to the company, and said:

"Beach was under no obligation and had the right to determine which bid submitted would be to his interest. The advertisement of the defendant (Beach) for bids was merely an invitation for offers and was not an offer to accept any particular bid. The advertisement could result in a contract only upon acceptance of a bid submitted by a bidder."

### Must Prove Contentions

The higher courts hold that in all legal controversies involving mechanic's liens the contractor must prove his contentions, as to when the last work was performed or when the materials were last delivered, otherwise the contractor will lose his suit.

For illustration, in *Atlas* v. *Riggins*, 341 S. W. (2d) 136, the testimony showed that a state law provides that a mechanic's lien against real property is not valid unless the testimony proves that within four months before the time the lien was filed, the contractor furnished materials or labor used on the real estate.

The contractor introduced testimony intended to convince the court that he complied with the terms of this state law, but the higher court was not convinced. Therefore, it refused to hold that the contractor had a valid mechanic's lien, saying:

"We have reached the conclusion that appellant (contractor) has not sustained the burden of proof. We find that appellant's (contractor's) evidence as to work done and material furnished is untrue. . . ."

### Law of Eminent Domain

Recently a reader wrote as follows: "If the county commissioners decide to condemn and appropriate my gravel pit to use it for a public purpose, what amount of money can I compel them to pay?"

The courts hold that the term "eminent domain" means that private property may be taken with "just compensation" for public purposes, without consent of the owner. In other words, the courts hold that private property can be condemned and appropriated for public purposes by the United States, state, county, or municipality.

The fifth amendment of the United States Constitution provides that private property shall not be taken for public use without just compensation. The courts consistently hold that "just compensation" means the full and perfect equivalent in money of the present value of the property taken. Thus the owner of a gravel pit must be put in as good position pecuniarily, as he would have occupied if his property had not been appropriated. Actually the owner's indemnity is the "fair market value" of the property when taken.

On the other hand, according to a recent higher court, "just compensation" does not mean the value the present owner of the property says it is worth to him. It means the amount the property will bring when placed on the open market for sale. This is so although the "open market" sale price is only a small fraction of what the property actually is worth to the present owner. This

NO SPOT FOR A BREAKDOWN!

KEEP IT GOING
AT ITS BEST
...USE ONLY
GENUINE HAYWARD
REPAIR PARTS!

Hayward Buckets are designed with the most efficient construction features known. And only with *genuine* Hayward replacement parts can you be sure of maintaining that same high quality. Cheaper "bootleg" parts reduce efficiency, raise operating costs and disrupt schedules.

Anticipate any possible breakdown.
Write today for list of genuine Hayward parts.

THE HAYWARD COMPANY
50 CHURCH STREET, DEP'T P, NEW YORK 7, N. Y.
*Builders of Better Buckets Since 1888*

*Enter 152-B on card, page 183*

law is applicable to both owners and lessors of real property.

For example, in *United States* v. *Penn Cement Corporation,* 178 Fed. (2d) 196, the testimony showed that a cement company had a lease contract in writing with a land owner by the terms of which the cement company was granted the exclusive right for a period of ten years to "enter upon the land" and to remove sand in such quantities as it might desire. Soon afterward the United States condemned the land and took possession of it.

In a later suit the higher court held that the cement company could recover only the present market value of the property, without regard to the profits it could have earned by future development of the property. The court said:

"The Supreme Court of the United States had made it clear that market value of property taken for public use is the standard for determination of 'just' compensation . . . The special quality of the sand should, of course, be considered in estimating its market value. But the final inquiry must be the fair market value of the same, assuming a purchaser is willing and able to buy and the seller willing to sell."

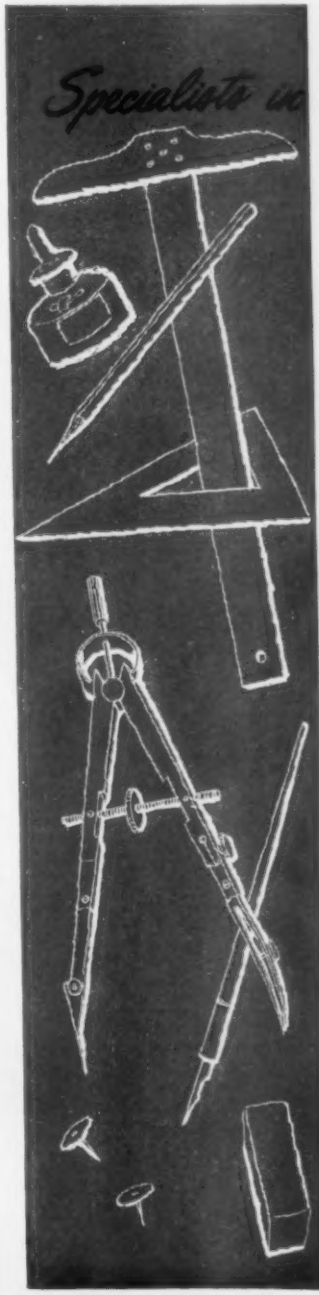
### Must Prove Loss

The circumstances are numerous under which sellers who sue purchasers for damages can lose their suits. First, it is well to know that the courts hold that a seller cannot recover damages from a purchaser who breached a sale contract or guarantee, unless the seller actually proves the amount of damages he suffered.

For example, in *Washington Sand & Gravel Company* v. *Brann & Stuart Company,* 162 Fed. (2d) 826, a sand and gravel company sued a contractor for damages for the latter's cancellation of a contract for the purchase of sand and gravel. The testimony showed that the contractor signed a contract to purchase 10,000 tons of washed gravel and 10,000 tons of concrete sand. After only 3,200 tons were delivered the contractor cancelled the contract and refused to accept and pay for the balance. At the time the contractor cancelled the contract the sand and gravel company still had 16,800 tons of sand and gravel washed and piled in its yard ready for delivery to the contractor.

During the trial the officials of the company testified that considering the cost per ton for producing both the sand and gravel and the contract price, 85 cents a ton profit would have been earned. The undelivered balance of 16,800 tons of the sand and gravel was sold by the company to other purchasers for 10 cents a ton above the price the contractor agreed to pay. The company officials testified that they had to rewash and process the sand and gravel before reselling it at the higher price. However, since the company did not prove how much it had lost financially, the higher court refused to allow the company any damages saying:

"The damage proof as it stood finally, concerned only the reprocessing of the sand and gravel . . . Thus it is at least open to grave doubt that appellant (company) suffered any actual loss."

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**and especially designed equipment for the ceramic, aggregate and the light-weight aggregate industry.**

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Our engineered installations in brick, sand, gravel, stone, sericite, ag-lime, and light weight aggregates are producing profits for their owners throughout the East. Call Aggregates Equipment today.

CRUSHING EQUIPMENT • SALES • SERVICE • PLANT DESIGNING — WE ERECT

**Aggregates Equipment, Inc.**

Leola, LANCASTER COUNTY, Pennsylvania • Phone, Leola—OldField 6-3061

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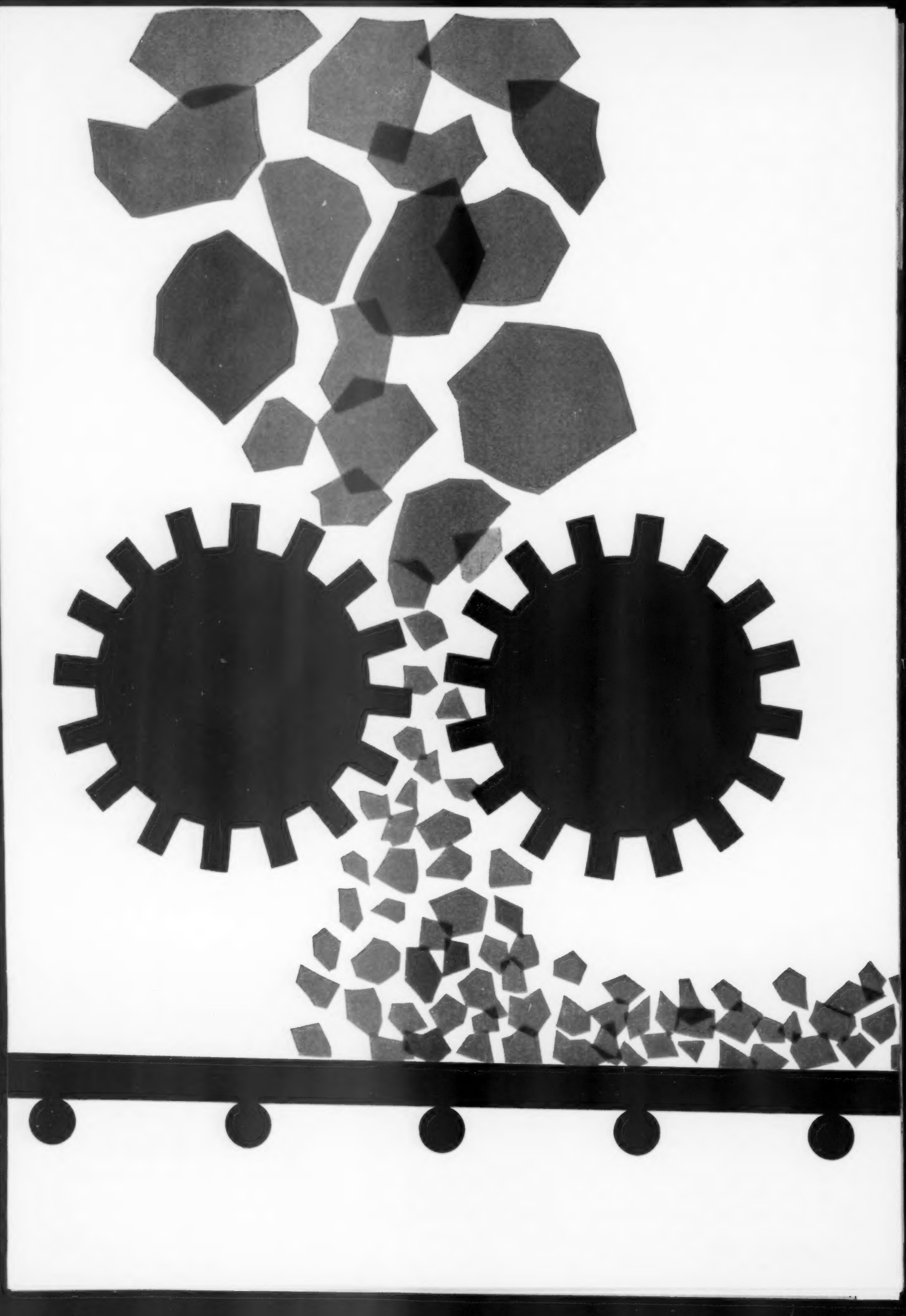


## TUFFMASTER WOVEN CARCASS BELTS SHOW OUTSTANDING ECONOMY IN CRUSHER OPERATIONS

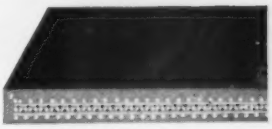
In handling 6″ to 8″ aggregate in short or extra long spans, Thermoid's new rubber covered, *woven-carcass* conveyor belt lasts 10-20% longer, yet costs no more than plied belts of similar quality and strength.

In addition, TUFFMASTER has these additional woven-carcass advantages: greater resistance to ripping and edge wear—greater impact absorption—superior fastener holding—superior troughability.

In constructing this superior belting, before the cover is applied the double woven cotton and nylon carcass is specially impregnated for superior cover adhesion. After complete assembly, each belt length is heat cured under tension to limit belt stretch to less than 3%. As a result, TUFFMASTER outlasts, outperforms all comparable belts. Available in Victor (natural rubber) or Ebonite (GRS) covers, ½″, ⅜″ and ¼″ thick. Belt widths 18″ to 48″, with 30″ and 36″ standard stock.

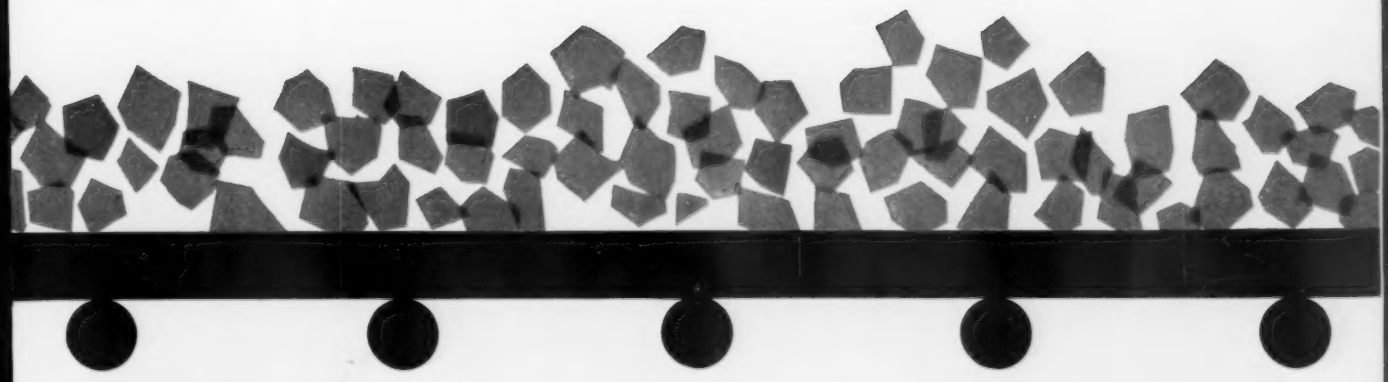
Call your Thermoid Big T distributor today for additional information on the many advantages of this long wearing, abrasion resistant belt for quarrying or rock handling operations. He also handles other Thermoid belts and industrial hose in types to fit every job.

Quaker Thermoid



Cross section shows the heavy cotton and nylon woven construction; stranded cotton and nylon yarn in the filler for superior fastener holding and rip and edge wear resistance; nylon cord longitudinal binders for added strength.

# KEEP JOBS MOVING WITH THERMOID BIG T CONVEYOR BELTS



PORTER

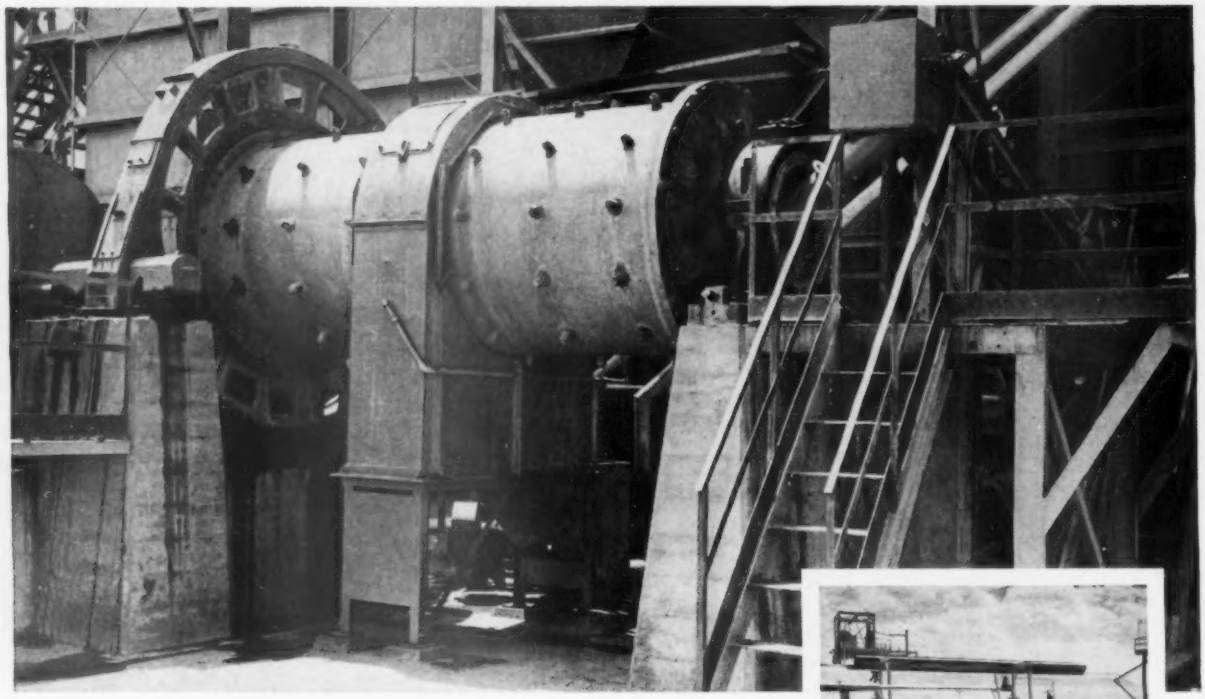
**THERMOID DIVISION**
**H. K. PORTER COMPANY, INC.**
200 WHITEHEAD ROAD, TRENTON 6, NEW JERSEY

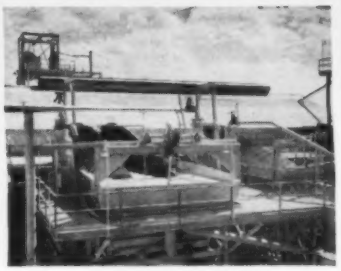
Enter 154 on card, page 183

# If you are short on natural sand

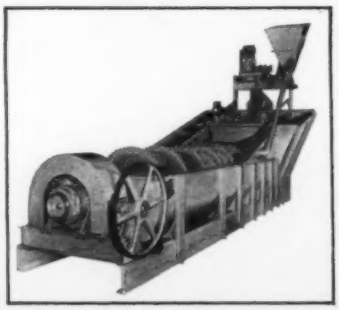
***Manufacture it on the job*** . . . by grinding stone or waste pea gravel in a Marcy Center Peripheral Discharge Rod Mill . . . for as low as 25¢ per ton. Marcy grinding produces a superior, cubical product for blending to meet the most rigid specifications. Eliminates hauling costs, too.

**Also, this makes you more competitive...by cutting costs and having a better product.**





**Washing and Classifying**...with the Akins Classifier you can wash, deslime, dewater, and *remove or save* sand sizes as desired. Akins provides a large, *working* pool area necessary to do this job efficiently.



**Heavy media separation**...many deposits can be most efficiently treated by heavy media separation. The Akins large, *working* pool area permits close control of products from feed of variable quality and quantity.

***WRITE FOR CATALOGS***

*The Company that cares enough to give you the best!*

*Manufacturing Division*

**MINE AND SMELTER SUPPLY CO.**

DENVER 16, 3800 RACE ST. | NEW YORK 17, 122 E. 42nd ST. | SALT LAKE CITY 1, 121 W. 2nd S. | EL PASO, 1515 11TH AVE. | ALBUQUERQUE, 701 HAINES N.W.

Licensed Manufacturers and Sales Agents in Canada, Australia, Sweden, England, South Africa
Sales Agents in Mexico, Peru, Chile, Philippine Islands, Japan, New York City (for Continental Europe) and in principal cities of the United States.

# Manufacturers' News

NICHOLAS DYKSTRA was named president, chief executive officer, and director of Mack Trucks, Inc., Plainfield, N. J., by C. A. JOHNSON, chairman of the board of directors, following a special board meeting.

N. Dykstra

Mr. Dykstra was most recently vice-president of finance and director of McDonnell Aircraft Corporation, St. Louis, Mo. Prior to that he was executive vice-president of Curtiss Wright Corporation. He was with Curtiss Wright for 26 years, advancing through the Controller's Department to general manager of Utica Bend Division and then to executive vice-president of the corporation.

Mr. Johnson, in addition to his duties as chairman, has served as chief executive officer of Mack since the resignation of P. O. PETERSON in December, 1958.

LINWOOD H. GEYER, 67, an associate in the advertising and sales departments of the New York offices of Ingersoll-Rand Co., died recently in White Plains, N. Y. He was employed by Ingersoll-Rand in 1915 upon his graduation from Lehigh University. Following service in World War I he was transferred to the London branch as special representative and director. In 1937 he returned to the New York office.

ROBERT B. MOORE has been appointed manager of process industries sales and engineering for the General Electric Company, Schenectady, N. Y. He will be responsible for the integration of sales and engineering work and will represent the company to markets such as mining, materials handling, and cement.

The board of directors of the Construction Industry Manufacturers Association (CIMA) announces the completion of committee appointments for the 1963 Construction Equipment Exposition and Road Show. Three committees have been added: housing committee, rules and qualifications committee, and space allocation committee. The board previously announced the administrative committee and the publicity and public relations committee.

J. E. MITCHELL is chairman of the housing committee. Mr. Mitchell is division manager, manufacturer sales, The Firestone Tire & Rubber Company. Members of his committee are: R. G. GREER, International Harvester Company, WILLIAM D. LEASE, Athey Products Corporation, D. A. MILLIGAN, J. I. Case Company, GORDON K. RAY, Portland Cement Association (representing Materials & Services Division of A.R.B.A.).

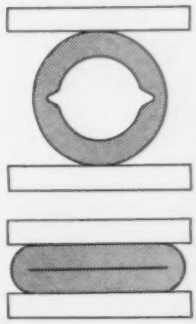
The chairman of the rules and qualifications committee is BUEL M. WALLIS, vice-president, director of marketing, Schield Bantam Company. He will be assisted by: E. J. MERCER, vice-chairman, Allis-Chalmers Mfg. Company, BROOKS M. DYER, Pittsburgh Plate Glass Company (representing Materials & Services Division of A.R.B.A.), EDWARD H. HOLT, Barber-Greene Company, ROBERT E. HUNTER, Detroit Diesel Engine Division, G.M.

A. J. LICHTINGER, executive vice-president, The Wellman Engineering Company, is chairman of the space allocation committee. His committee is as follows: GEORGE C. WILLIAMS, vice-chairman, Northwest Engineering Company, S. J. DUNCAN, International Salt Company (representing Materials & Services Division of A.R.B.A.), GEORGE B. FLANIGAN, Chain Belt Company, KENNETH P. KERR, Butler Bin Company, E. C. CHAPMAN, Caterpillar Tractor Company. The show is the world's largest industrial exhibit, and will be held in the International Amphitheatre, Chicago, February, 1963.

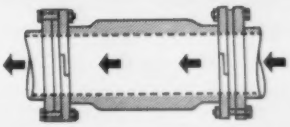

**Massco-Grigsby**

**PINCH VALVES**

**"Hinged" sleeve permits tight closing reduces wear.**

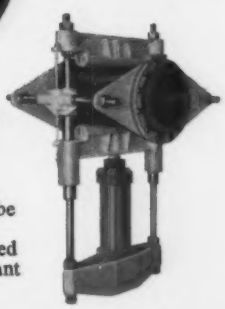


***Recesses in sleeve serve as "hinges" during compression.***



Unobstructed flow eliminates high friction loss; and there are no metal parts in contact with pulp or liquid.

Several types of closing mechanisms are available, from handwheel to motorized.



**Automated Systems.** Completely automatic systems may be coordinated and interlocked with other plant equipment.

1" to 14" I.D.; pressures to 150 psi; temperatures to 200° F.

***WRITE FOR CATALOG 609***

**MINE AND SMELTER SUPPLY CO.**

3800 RACE STREET • DENVER, COLORADO
OFFICES AND AGENTS IN PRINCIPAL CITIES

***Enter 157 on card, page 183***

CARLTON F. EVANS has been named assistant midwestern regional sales manager of the Bagpak Division, International Paper Company, New York, N. Y.

Mr. Evans, who joined I-P as a sales trainee in 1949, was stationed in the division's Atlanta office until last year, when he joined the midwestern Bagpak sales force in Chicago.

The management of Kaiser Refractories & Chemicals Division, Oakland, Calif., has announced that it has concluded a licensing agreement with Ceramica Olivos S. A., Buenos Aires, Argentina, for the manufacture of refractory specialty products. The South American firm will produce these products at its Buenos Aires plant.

Under the terms of the licensing agreement, Ceramica Olivos S. A. will manufacture and market in Argentina a line of fire clay specialties including plastic refractories, castables, mortars, cements, coatings and insulating materials. All products will be manufactured under Kaiser trademarks, formulae and quality control methods.

The resignation of JOHN V. N. DORR from the board of directors of Dorr-Oliver Incorporated, Stamford, Conn., was accepted "with great reluctance" at the recent quarterly meeting of the board, according to an announcement by WILLIAM L. OLIVER, chairman. After formally expressing its regret, the board elected Dr. Dorr "director emeritus". As a director, he had also been honorary chairman of the board.

J. V. N. Dorr

At the same meeting, the board elected RUSSELL H. DORR, Washington representative of the Chase-Manhattan Bank, a director of the corporation.

Dr. Dorr founded The Dorr Company, one of the two principal predecessors of Dorr-Oliver Incorporated. His personal inventions include sedimentation and classification devices now accepted as basic processing tools throughout the metallurgical and chemical industries, and the water and waste treatment fields, and he added the words thickener and classifier to the engineer's vocabulary. Now 89, Dr. Dorr is still active in the affairs of The Dorr Foundation and Dorr Associates, Inc., and is a director of American Synthanite Corporation. He is now on a three-month tour of Europe and the Middle East, his resignation as a director having been tendered prior to his departure.

ALEXANDER L. BUPP has been appointed director of purchases for Bucyrus-Erie Co., South Milwaukee, Wis.

Mr. Bupp, with the company for 22 years, was formerly director of planning. He will continue to direct the company's commercial evaluation activities.

*Alloy and Carbon Cast Steel Wheels by*

**FARRELL-CHEEK**

*While the need for replacement wheels is ever present in any plant, mine or quarry, your purchases will be many times further apart if you specify wheels and rollers of famous F85 alloy or F-C carbon electric furnace cast steel.*

*Crane wheels, typical of Farrell-Cheek circular steel castings, have the rigidity, toughness and hardness of treads and flanges to greatly outperform original equipment or replacement wheels.*

*CATALOG 24 HAS FULL LINE DESCRIPTIONS, ORDERING DATA AND COMPLETE SPECIFICATIONS. WRITE TODAY . . .*

OUR Fiftieth YEAR

**FARRELL-CHEEK STEEL CO.**

102 LANE STREET, SANDUSKY, OHIO

## Special report to users of Caterpillar equipment:

CAT CATERPILLAR

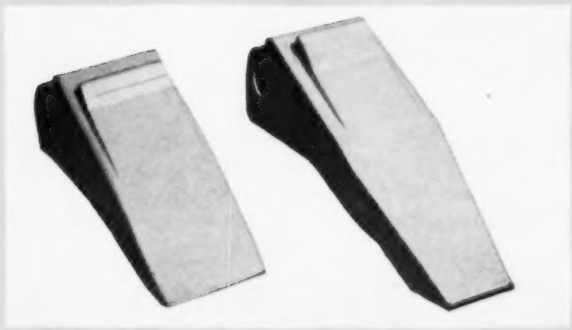
Parts you can trust
...cost less per hour

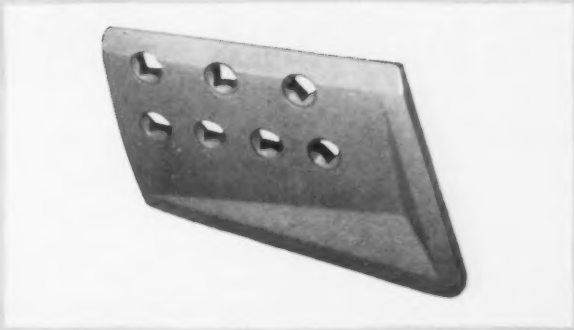
# New Cat No. 8 and No. 9 Ripper Tips outproduce other brands 25 to 50% in field tests

That's the kind of news you can use—to cut costs. This newcomer to the Caterpillar line of ground-engaging tools is making a name for itself with cost-conscious users.

**They're exceptionally wear-resistant**—hardened to Rockwell C50 for longer wear-life under any conditions.

**Check the price!** Improved Cat Tips sell for about the same *or even less* than other leading brands.





**They're available in two new designs.** Both the short and long tips shown in the photograph are *self-sharpening* to keep their working edge until replacement. The long tip gives extra wear-life with only a slight reduction in impact strength. Low-cost, weld-on shank adapters are available for *all brands* of shanks. No need to wait—you can put these new Cat Tips on your job immediately.

**In field tests the short tip was pitted against two leading brands** on rippers working in caliche and cemented conglomerate beds. The Cat Tip outproduced the other brands 25-50%—representing savings of 38-54% in replacement costs.

**Outstanding impact strength!** One No. 9 Tip, tested in *solid* granite, took 13 smashing blows from another D9 pusher that backed up 10 feet before each charge at the stalled D9 Ripper.

**And here's another money-saving newcomer**—Cat's new No. 7, No. 8, No. 9 End Bits are redesigned for better digging ability. They self-sharpen as they wear away for continuing like-new performance. They're forged alloy steel and heat treated for outstanding strength and wear-resistance.

**Compare other ground-engaging tool brands** against the Caterpillar line. Keep machine-hour records and find out for yourself which is the best buy. Those who do, buy Caterpillar.

See your Caterpillar Dealer for the best in parts and service.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

**Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment**

# THE MODERN WAY TO CLASSIFY AND DEWATER FINE MATERIALS

*Proved in installations throughout the world, Rheax System classification plants have made possible better concrete with 15 to 30% less cement, because of their superior ability to classify sands.*

No market specification is too tough for the operator of a COMCO Rheax® System classification plant . . . and his lower operating costs give him the edge on his competitors.

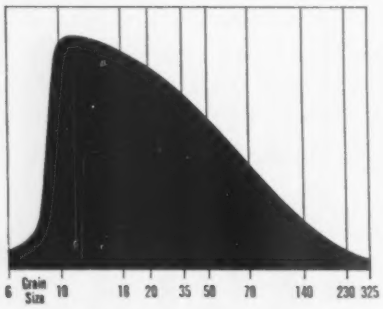
- The economy of a COMCO classification plant is unbelievably low. All you have to do is pump the raw slurry to the top of the COMCO tower, provide a fresh water supply . . . and the rest of the job takes place *automatically, without operators and without power.*
- The accuracy of the COMCO plant (specifically described by the curves) remains the same regardless of changes in the grading of the raw slurry, in the number of cuts, or in the separation size.

COMCO classification and dewatering plants are the modern way to meet the ever-tightening specifications of materials technology. For all the facts, write for our new Bulletin R-100.

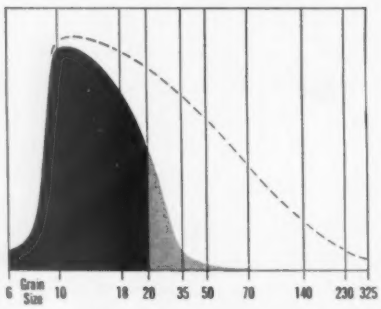
**COMCO**

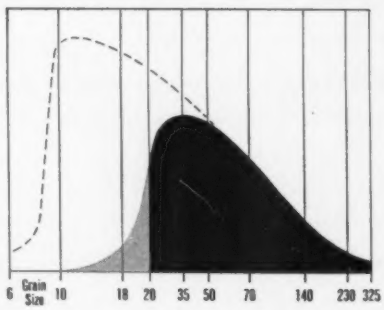
**CORPORATION** 5421 Lancaster Ave.
Philadelphia 31, Pennsylvania

**Rheax System** Classification and Dewatering Plants
**Binder System** Vibratory Screens and Conveyors




A. This typical natural raw sand was fed to a Rheax plant for continuous separation at Mesh 20.




B. Composition of the minus Mesh 20 and the plus Mesh 20 fractions achieves near perfection as shown by the black sections above. These curves represent an actual case history of Rheax performance.

WADE E. CANFIELD has been elected to the board of directors of The S. K. Wellman Company, Bedford, in an announcement from Robert W. Biggs, president.

W. E. Canfield

Mr. Canfield, affiliated with the firm since 1936, has been vice-president in charge of sales since 1941. He is also president and a director of The S. K. Wellman Company of Canada, Ltd., Toronto.

DONALD M. MAHADY has been appointed belting product manager of the Boston Woven Hose & Rubber Division, American Biltrite Rubber Company, Cambridge, Mass.

Mr. Mahady was New York district manager for the last two years. He succeeds W. J. POTTER, who resigned to take a position in another industry.

EDWARD E. BRUSH has been elected executive vice-president of Soiltest, Inc., a subsidiary of Cenco Instruments Corp. Mr. Brush was previously vice-president, sales, for Soiltest, Chicago manufacturer of apparatus for engineering testing.

Victor Equipment Company, San Francisco, Calif., supplier of welding and cutting equipment and related products, has been named prime distributor for Metal & Thermit Corporation's Murex line of welding electrodes, machines and accessories in the southern California area. Victor now handles the M&T Murex products in northern California.

RONALD RAMSAY, secretary of the Bemis Bro. Bag Co., St. Louis, Mo., has retired after a 35-year career with the company. He joined Bemis in 1926 as an accountant and has served as secretary since 1955.


# TRIAL SAMPLES

## *Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!*

**HANDI-LUBE LIQUID GEAR COMPOSITION**

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal —no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

**WIRE ROPE SPRAY LUBRICANT**

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300% —special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

**65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:**

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

**THE WHITMORE MANUFACTURING CO.**

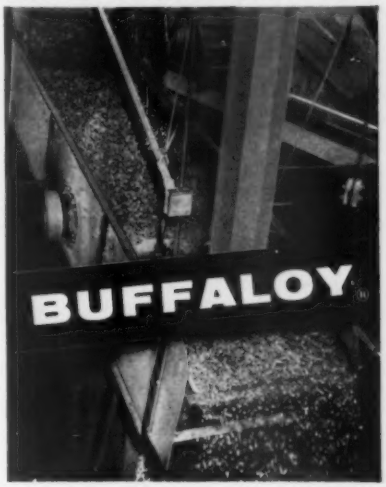
LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

Enter 161-A on card, page 183



# LONGEST SERVICE AT LOWEST COST PER TON




## anti-abrasive wire cloth

Here's the toughest mineral aggregate screen in the business . . . outperforming and outlasting screens that cost appreciably more. Specially processed for greatest resistance to wear, Buffaloy has both the hardness to hold up under severe abrasives and the flexibility to shrug off heavy shock loads.

Count on Buffaloy for many extra hours of service and substantial savings in your screening operations. Vastly superior to other high carbon wire screens, it is made in two grades:

Regular . . . for average conditions.

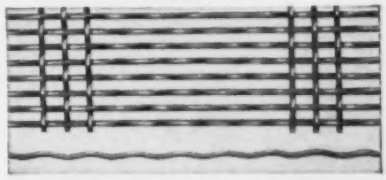
Super . . . . for highly abrasive materials.

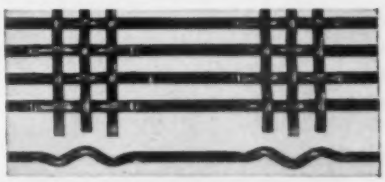
Now available in an extra wide selection of weaves, mesh sizes and gauges — either as flat pieces or vibrator screen panels with special edges — Buffaloy can answer your every sizing need.

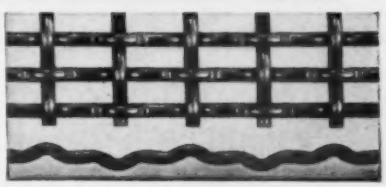
Get the complete story on Buffaloy and what it can do for you. Write for New Bulletin 600P.

**BUFFALO WIRE WORKS COMPANY, INC.**

526 Terrace, Buffalo 2, N. Y.







Enter 161-B on card, page 183

Principals in the newly organized cement industry department at Allis-Chalmers are (standing, from left) C. E. Dandois, W. T. Farnsworth, Frank E. Briber Jr., R. C. Coffey, C. E. Burnett, (seated, from left) M. S. Jones, D. L. F. Wilson, H. W. Schaub, V. G. Murdock, and C. E. Lacy. J. K. Gibson was absent when the picture was taken.

A cement industry department to handle the sale of all A-C products and services to the domestic cement and lime industries has been organized at Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

FRANK E. BRIBER JR. is manager of the new department which is composed of a number of account managers individually located in strategic market centers, and a process engineering group in Milwaukee. The latter group is made up of specialists in various aspects of cement manufacture and its related processes, equipment, and electrical applications.

C. E. BURNETT is manager of process engineering; J. K. GIBSON, senior process engineer; and V. G. MURDOCK, senior electrical engineer.

Account managers are C. E. DANDOIS, Allentown, Pa., Lehigh Valley; W. T. FARNSWORTH, Hartford, Conn., Eastern; R. C. COFFEY, Los Angeles, Pacific; M. S. JONES, Denver, Western; D. L. F. WILSON, Milwaukee, Great Lakes, H. W. SCHAUB, Chicago, Midwest, and C. E. LACY, Atlanta, Southern accounts.

The account managers will serve specifically assigned accounts on a nation-wide basis, with the assistance of the A-C regular district sales organization. In addition, the account managers will assist the various divisions of the tractor group in the development of these markets.

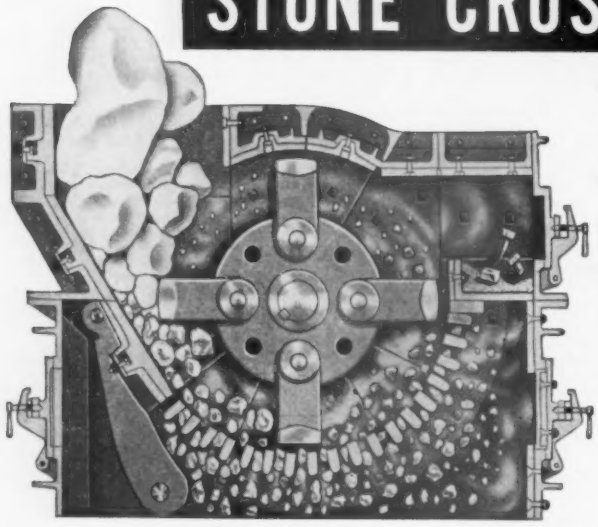
The purpose of combining the marketing and engineering groups into one department oriented to the industries served is to make all Allis-Chalmers facilities available to the solution of industry problems.

Rushing & Mason Equipment Company, Little Rock, Ark., has been appointed distributor in the state of Arkansas for the Columbia line of Armor-Tough replacement parts for crushers, tractors, and shovels for Columbia Steel Casting Company, Portland, Oreg.

JAMES F. ST. VINCENT has been appointed sales representative in the central states district for the construction machinery section of Chain Belt Company, Milwaukee, Wis. Mr. St. Vincent joined Chain Belt in 1957 as a student engineer. He has served as an application engineer in the conveyor division and was named a sales engineer in the construction machinery section's bin and batch department in 1959. He is a 1957 industrial engineering graduate of Michigan State University.

St. Regis Paper Company, New York, N. Y., has begun operation of a second extensible unit, installed on its new 262-inch Beloit paper machine at Tacoma, Wash. With this start-up St. Regis now produces extensible paper on both the East and West coasts.


American MODEL ACS
STONE CRUSHERS



- Capacities up to 250 tons per hour
- Ruggedly built for extra heavy duty service
- Manganese steel liners, breaker plates, hammers and grate bars
- Wide range of reduction ... low-cost operation

Write today for literature! "Better Stone Crushing"

American PULVERIZER COMPANY
ORIGINATORS AND MANUFACTURERS OF RING CRUSHERS AND PULVERIZERS
1059 MACKLIND AVE. ST. LOUIS 10, MO.

Enter 162 on card, page 183





Enter 163 on card, page 183 →

# HOW TO PULL A TOE

## (WITHOUT PUSHING YOUR COSTS)

Wyandot Dolomite, Inc. (Carey, O.) was getting an erratic but fairly consistent toe at the bottom of the quarry face after each blast.

This meant expensive additional shooting, wear and tear on the shovel, reduced payloads in the haul trucks.

Du Pont was called in. What recommendations could we offer?

The answer turned out to be a *combination* of quarrying products.

1. Into the bottom of each hole went Tovex®—non-nitroglycerin gelatin that comes in flexible polyethylene bags. It slumps, fills the entire diameter of the hole to give maximum density at minimum cost.

2. Next came Nitramite® 2. This is one of Du Pont's new nitro-carbo-nitrate blasting agents. It fills the need for a quality, medium-low-price product for loading wet holes of medium and large diameter.

3. The remainder of the water-filled portion of the hole was topped up with "Tovex".

4. Completing the load were several decks of Nilite® 101—Du Pont's new pre-mixed, free-running product of medium density ideally suited for dry holes from 2″ diameter up.

5. HDP-1 Primers were used to prime the various decks of blasting agents in the hole. HDP Primers are new high-detonation pressure units especially designed by Du Pont for initiating non-cap-sensitive materials.

6. Primacord* and Du Pont MS Delay Connectors primed the shot.

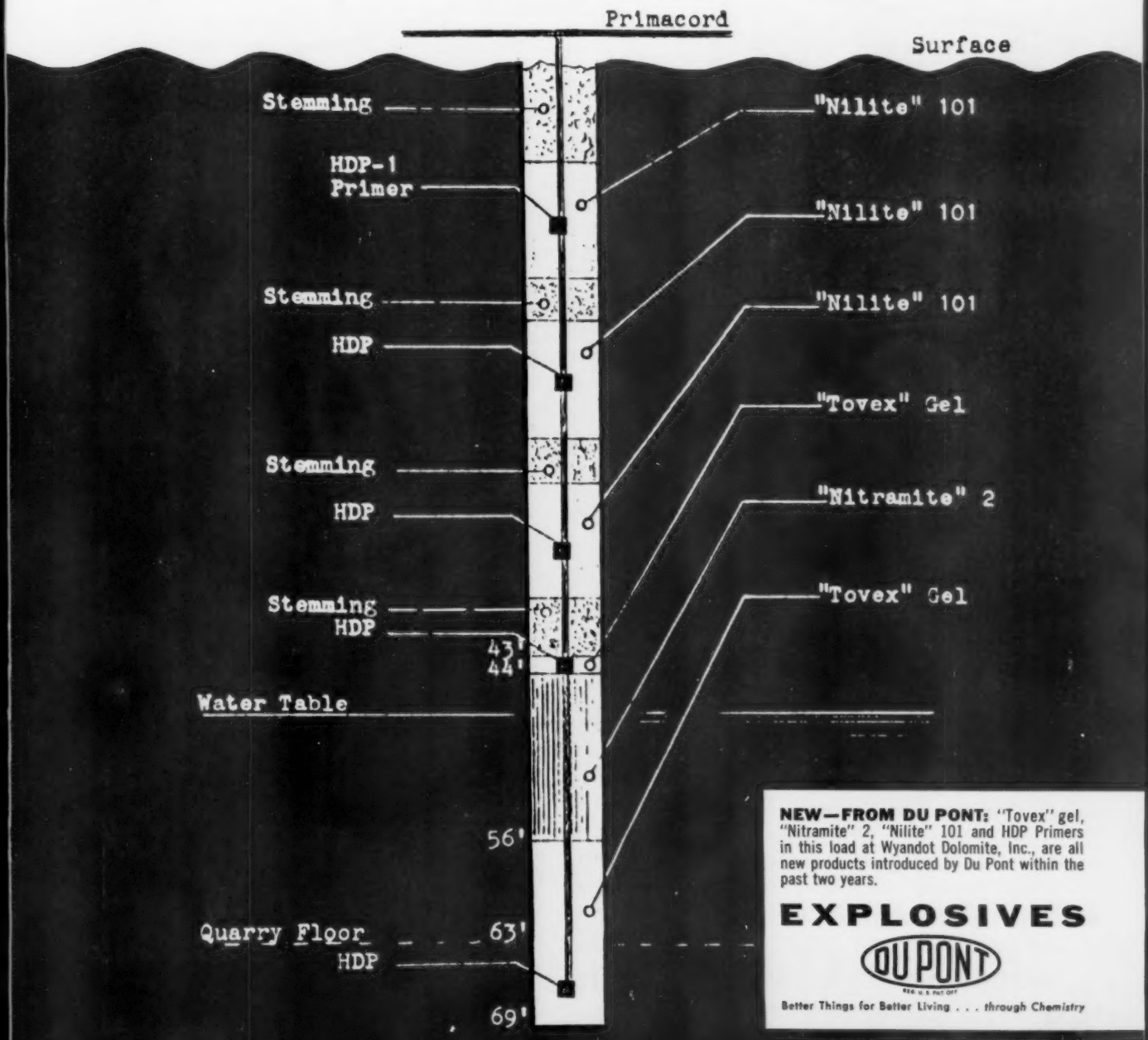
**Safest technique.** This combination of non-nitroglycerin blasting agents not only removes the toe effectively and provides a higher average daily production, but it is also one of the safest blasting techniques known today.

**5½¢ per ton.** Yet, by using a team of products which combine low cost and high Du Pont quality, the cost is only about 5½ cents per ton of rock removed.

What's *your* problem? Can we help you pull a toe? Or show you some other way to break more tons per dollar?

Ask your Du Pont Explosives Department representative or distributor for details. Or write Du Pont, 2444 Nemours Building, Wilmington 98, Delaware.

*Registered trademark of the Ensign-Bickford Company.




**NEW—FROM DU PONT:** "Tovex" gel, "Nitramite" 2, "Nilite" 101 and HDP Primers in this load at Wyandot Dolomite, Inc., are all new products introduced by Du Pont within the past two years.

**EXPLOSIVES**

DU PONT

REG. U.S. PAT. OFF.

Better Things for Better Living . . . *through Chemistry*

# *Here's what you'll find on Pit and Quarry's BRAND NEW* LIGHTWEIGHT AGGREGATE PLANT MAP

This map is big—33 by 34 inches—and printed on extra-heavy paper suitable for framing or pasting. Listings include Canadian provinces in addition to continental United States and Hawaii.

Orders will be handled promptly at the following quantity prices—

| | |
|---|---|
| 1 to 10 maps | 50c each |
| 11 to 25 maps | 45c each |
| over 25 maps | 40c each |

**PIT and QUARRY PUBLICATIONS, Inc., 431 S. Dearborn St., Chicago 5, Ill.**

An expansion program involving new sales management appointments and the creation of new sales territories east of the Mississippi has been inaugurated by the Bag Division of St. Regis Paper Company, New York, N. Y.

HARRY W. WALKER has been named director of operations, sales, for a newly formed Great Lakes-Gulf area which will include the territory from the Great Lakes, through the Ohio Valley, and south to the Gulf of Mexico. Mr. Walker, who will make his headquarters in the company's Chicago office, has been Bag Division sales manager for the Ohio Valley region.

DON R. RUSSELL has been appointed to succeed Mr. Walker at Columbus as sales manager of the Ohio Valley region. Mr. Russell has served for the past two years as multiwall products manager for the Bag Division.

WILLIAM A. HARRIS will assist Mr. Russell in the new Great Lakes-Gulf area and will continue as sales manager of the Chicago region.

JOHN B. BRENT, who will also assist Mr. Russell will continue as sales manager of the Southern region with headquarters in Birmingham, Ala.

CHARLES A. WOODCOCK, who continues as director of operations, sales, for the Eastern area, with headquarters in New York City, will be assisted by the following newly appointed regional sales managers: WILLIAM S. DOOLAN, sales manager of the newly formed South Atlantic region, with headquarters in Savannah, Ga.; ROBERT E. HARRISON, Mid-Atlantic region, with headquarters in Baltimore; WILLIAM T. ORR, Northeastern region, with headquarters in New York City; and WILLIAM H. VERSFELT, metropolitan New York region.

Harnischfeger Corp., Milwaukee, Wis. (through its wholly owned subsidiary, Harnischfeger Corp. of Canada, Ltd.), has signed a long-term manufacturing contract with John Inglis Co., Ltd., Toronto, Ont. The purpose of the agreement is to increase the availability of "P&H" construction and mining equipment and replacement parts in Canada.

Officials of the Foxboro Company, Foxboro, Mass. have announced plans to acquire the assets of Waugh Engineering Company, Van Nuys, Calif., manufacturers of electro-mechanical and electronic instruments, in exchange for 12,806 shares of its common stock. The firm will be operated as a division of The Foxboro Company and will continue under the direction of its founder, CHARLES C. WAUGH. No changes in personnel are anticipated.

GLOSTER P. HEVENOR, president and chairman of the board of the Deynor Corporation, Mamaroneck, N. Y., died recently.

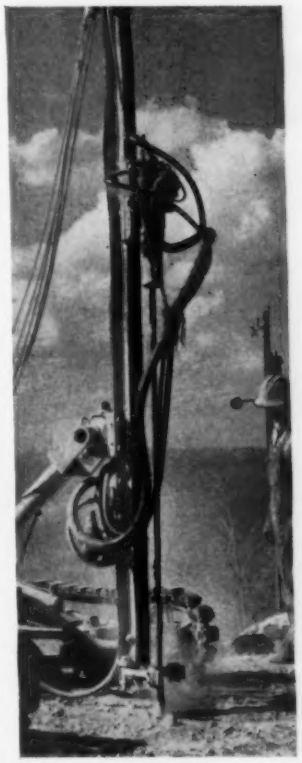
LEON L. MEYER has been appointed manager of truck tire sales of the Atlanta district for The General Tire & Rubber Company, Akron, Ohio.

Mr. Meyer joined General Tire in 1952. He was named manager of retail development in 1958, and became assistant to General's manager of passenger tire sales in Akron, in 1960.

RICHARD E. SCHNEIDER has been appointed geologist-sales engineer for the Stedman Foundry & Machine Company, Inc., Aurora, Ind. His territory will include Minnesota, Iowa, Missouri, and portions of Illinois and Wisconsin. His headquarters will be at Moline, Ill. Prior to this affiliation Mr. Schneider was a uranium consultant in Colorado.

R. E. Schneider

H. DEFOREST HARDINGE was appointed vice-president for Hardinge Company, Incorporated, and Hardinge Manufacturing Company, York, Pa., recently.

Aggregate producer finds

**Brunner & Lay Rok-Bits Best**

you will too!

Aggregate production for 1¼-million cu. yds. of concrete going into a southwestern dam, called for blast holes from 12 to 40 ft. deep. Using Brunner & Lay 4-inch diameter Rok-Bits the drillers put down one 40 ft. hole per hour in Ozark limestone. On this and other low-cost jobs Rok-Bits are used because they produce more feet of hole per dollar. Choose them for your next job. You'll wish you had sooner. Request bulletin #759R. Brunner & Lay, Inc., 9300 W. King St., Franklin Park, Ill. Plants and conversion shops from coast to coast.

All bit and steel types, all threads and popular sizes.

**Brunner & Lay**

CARBIDE ROK-BITS, DRILL RODS, INTRASET STEEL, COUPLINGS, ADAPTERS, EXTENSION RODS, STRIKING BARS

Enter 165 on card, page 183

ROBERT L. WICKER has been appointed manager of distributor sales for American Hoist & Derrick Company, St. Paul, Minn.

R. L. Wicker

Mr. Wicker, a native of California and a graduate from the College of the Pacific, brings to American Hoist a broad background of experience in the distributor field, having spent almost his entire working career in the construction equipment industry. He was general sales manager of Dart Truck and more recently served in the same capacity with Bros., Incorporated, Minneapolis, Minn., a road building machinery manufacturer.

CHARLES B. MCCOY, general manager of the explosives department of Du Pont Company, Wilmington, Del., was elected a vice-president, director, and member of the Executive Committee recently.

He succeeds ROBERT L. RICHARDS who is retiring as a vice-president and member of the committee. As Mr. Richards will continue as a director of the company the membership of the board of directors was increased to 30.

DR. B. H. MACKEY, an assistant general manager of the explosives department, was appointed general manager of that department.

N. J. (NICK) DECKER, general works manager of Koehring Division and a 37-year veteran with Koehring Company, Milwaukee, Wis., has retired.

ALFRED H. CORDES JR., LYTTON A. KENDALL JR., and ROBERT F. ZIMMERMAN are newly named application engineers to the processing machinery department of Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Mr. Cordes and Mr. Kendall have been assigned to cement machinery sales. Mr. Cordes is a graduate engineer from Texas A. & M., and Mr. Kendall received his mining engineering degree from the University of Minnesota.

Mr. Zimmerman, an engineer of metallurgy graduate of the Colorado School of Mines, becomes a member of the company's minerals processing group.

The following changes in the management staff of North American Refractories Company, Cleveland, Ohio, have been announced.

W. R. RAMSAY was elected to the position of 1st vice-president by the board of directors. He was formerly vice president, administrative, and has been connected with North American Refractories Company since June, 1957. He also has been a director of North American Refractories since 1955.

E. A. WILLIAMS JR., formerly manager of operations, was elected vice-president in charge of operations. He has been with the company since February, 1951. Mr. Williams is a graduate of North Carolina State University with a degree in ceramic engineering.

FREDERICK W. SCHROEDER, former director of research, was elected vice-president in charge of research. He has been connected with the company since February, 1956, and is a graduate of the University of Washington with degrees in chemistry and ceramics.

Several appointments at J. I. Case Company, Racine, Wis., have been announced.

D. A. MILLIGAN has been named to the new post of general manager, marketing and product development.

J. P. CODY becomes general sales manager of the Industrial Division.

R. P. MEYERS has been appointed Industrial Eastern Division manager to succeed D. H. MITCHELL. Mr. Mitchell has resigned to become general sales manager of another firm in the construction machinery industry.

J. R. HALEY, presently a dealer development manager, replaces Mr. Meyers as north central regional manager.


IT'S A FACT

Longyear unitized drill rigs slash set-up time, cut costs

Your crews carry out exploration projects faster and save dollars with a Longyear jeep-mounted Diamond Drill. No heavy lugging or time wasted moving from job to job. Jeep-mounted rigs are available with the popular Longyear "Prospector" or powerful "24". Respective capacities 300 ft. and 750 ft. with EX rods.

*For complete Information contact our nearest office.*

Longyear

E. J. LONGYEAR CO.
MINNEAPOLIS, MINNESOTA, USA

CANADIAN LONGYEAR LTD. North Bay, Ontario, Canada
LONGYEAR DE MEXICO S. A. de C. V. San Bartolo, Mexico
NIPPON LONGYEAR COMPANY LTD. Tokyo, Japan
LONGYEAR N. V. The Hague, Holland
LONGYEAR ET CIE Paris, France
CHRISTENSEN LONGYEAR (INDIA) LTD. Bombay, India

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# Re-Usable Armco Corrugated Steel Structures Are Sturdy, Economical

**Sturdy**—Conveyor tunnels made of Armco MULTI-PLATE® or Liner Plate easily withstand the tremendous weight of aggregate piles. They gain their strength from material properly compacted around them. They won't crack or break.

**Economical**—With either Liner Plate or MULTI-PLATE your own crews can quickly bolt the plates together. The structural bolts make ideal utility line hangers. Hoppers are easy to install. And you can relocate any Armco Structure . . . many times over.

For complete information on the economy of Armco Corrugated Metal Structures, just fill in and mail the coupon. An Armco Sales Engineer will provide it with no cost or obligation to you.

Steel

For rugged, economical service

ARMCO Drainage & Metal Products

Armco Drainage & Metal Products, Inc., 5201 Curtis Street, Middletown, Ohio

☐ Have Armco Sales Engineer Call

NAME_____

COMPANY_____

TITLE_____

STREET_____

CITY_____ ZONE____ STATE_____

ROBERT L. SMITH has been named manager of sales promotion for Bucyrus-Erie Co., South Milwaukee, Wis., manufacturer of construction, mining and drilling equipment.

R. L. Smith

He had been a sales representative, headquartering in the Chicago regional office for six years. During that period he represented the company in the Detroit area and other midwestern territories.

FRANCIS E. DUTCHER has been appointed general manager of the Building Products Division and elected a vice-president of Johns-Manville Corporation, New York, N. Y.

Mr. Dutcher succeeds R. S. HAMMOND, vice-president of Johns-Manville Corporation, who is assigned to special duties in the office of the president until his retirement on August 1, 1961, after 35 years company service.

As general manager, Mr. Dutcher will be responsible for the production, sales, and profits of the J-M Building Products Divsion, which operates 18 plants and a network of sales offices throughout the United States.

PAUL I. NIELSEN has been appointed to the newly created position of development manager, machinery and equipment, for Aluminum Company of America, Pittsburgh, Pa.

Mr. Nielsen, who joined the company in 1946, is at present directing the development of aluminum application, for use in pumps, heavy machinery, hydraulic equipment, and related uses.

Three new vice-presidents have been named to the Smith Engineering Works, of Milwaukee, Wis., a division of Barber-Greene Company, Aurora, Ill., and one of the company officers has been promoted to assistant secretary and assistant treasurer of Barber-Greene Company.

The three new vice-presidents are:

JAKE R. SMITH, named vice-president, export sales. He joined Smith in 1950 as a sales trainee, and most recently was export sales manager.

WILLIAM P. MCCONNELL, appointed vice-president, domestic sales. Mr. McConnell joined Smith in 1946 as a sales trainee, and prior to this assignment was domestic sales manager.

FRANK M. ALLEN, appointed vice-president, works manager. Mr. Allen joined Smith as plant superintendent in 1949, and was named works manager in 1957.

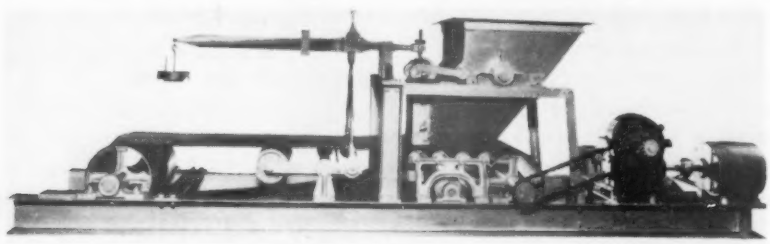
JOHN F. VOGEL became associated with Smith in 1949, and was made head of the accounting and credit departments in 1952. He served as assistant secretary of Smith Engineering Works prior to the merger with Barber-Greene Company. As assistant secretary and assistant treasurer of Barber-Greene he will meet the responsibilities inherent to these positions as they apply to Smith.

W. CHARLES BRANDENBURG has been appointed manager of mining sales for the Electrical Products Division of Joy Manufacturing Company, St. Louis, Mo. Mr. Brandenburg joined the firm in 1957 as a sales engineer.

T. B. APPLEWHITE has been appointed product sales manager of conveyor belting products for United States Rubber Co., New York, N. Y.

Mr. Applewhite joined U. S. Rubber as a sales trainee in 1947. He has served in various sales capacities in the Memphis, St. Louis and Pittsburgh branches for the rubber company before his transfer two years ago to the mechanical goods division's sales office in Passaic (N. J.), where he will continue to make his headquarters.


**"SCHAFFER POIDOMETERS ARE TOPS IN MY PLANT AND I'D RECOMMEND THEM TO YOU ANYTIME", says a plant operator.**



Scaling jobs are "duck soup" when you scale with Schaffer Poidometers. It's available with remote control devices for showing and changing feed rate and with total weight recorder.

If you are a bulk material handler then you need a Poidometer to see bulk material handled efficiently and performance will prove itself when you see bulk material tonnages climb.

**OVER 1600 NOW SERVING INDUSTRY**

•

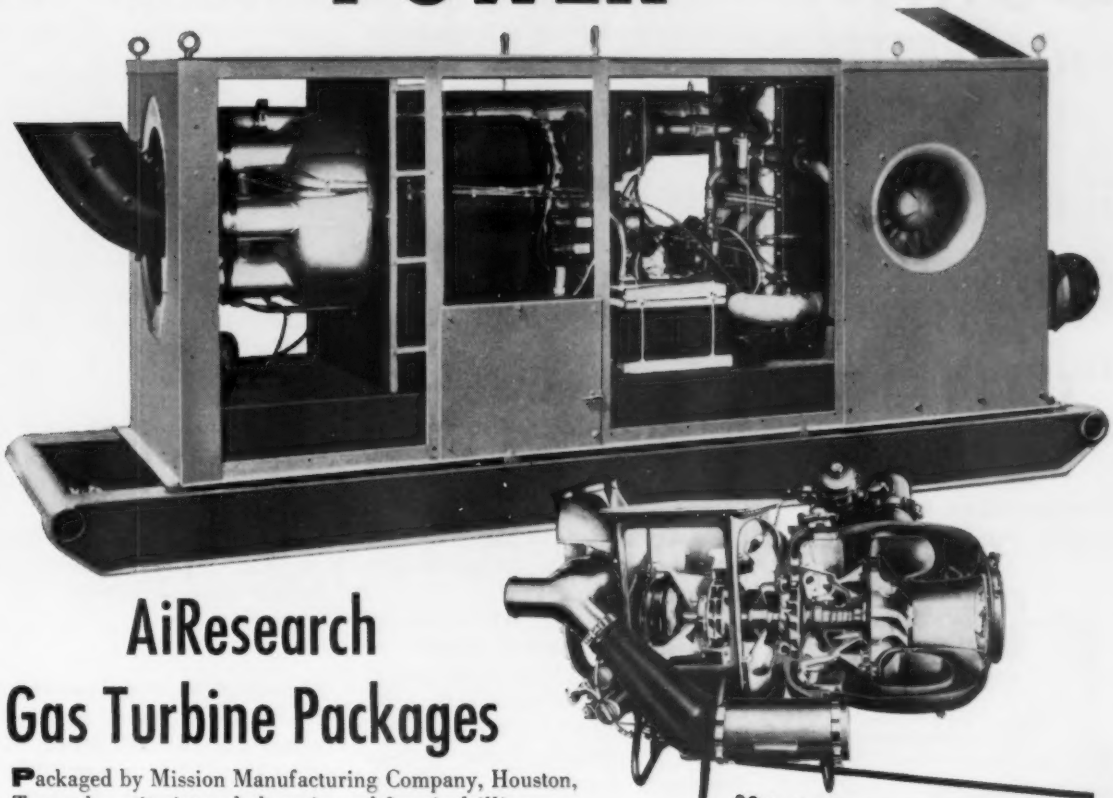
*For complete information write for our catalog No. 5*

**SCHAFFER POIDOMETER CO.**

2828 SMALLMAN STREET PITTSBURGH 22, PA.

*Enter 168 on card, page 183*

# compact POWER for industry



## AiResearch Gas Turbine Packages

Packaged by Mission Manufacturing Company, Houston, Texas, the unit pictured above is used for air drilling and is representative of a number of different types of AiResearch industrial gas turbine power packages now available. These lightweight, compact gas turbine packages provide portable compressed air and shaft power for a wide variety of industrial applications.

The basic power package consists of an AiResearch gas turbine compressor and power unit designed around components and accessories proved by laboratory and field testing over a period of years. It is mounted on a skid, enclosed against the weather, with heat exchangers, operating controls and safety devices.

The Mission packaged GTC 105 AiResearch Gas Turbine Compressor Unit pictured above supplies compressed air only. The cutaway Model GTCP 85-91 AiResearch Gas Turbine Compressor and Power Unit provides shaft horsepower and compressed air simultaneously, or either form of power independently and interchangeably. Other models are also available to supply either type of power alone.

AiResearch Manufacturing Division of Arizona is a world leader in the design, development and manufacture of lightweight turbomachinery.

***30 to 850 horsepower*** in a lightweight, compact, dependable package.

***Heat at 10,000 to 100,000 Btu*** per minute in free-flowing air up to 950°F or compressed air from 90°F up to 500°F.

***Dependable quick starting*** under conditions of heavy dust or sand, extreme heat and cold from sea level to 10,000 feet, reaching peak efficiency in seconds.

***High pressure, high volume*** fluid pumping by a compact, portable unit.

***Large volumes of compressed air*** at 30 to 350 psig at 10 percent of the conventional equipment weight.

***Shaft power applications*** for driving pumps, compressors and other mechanical equipment.

***Fuel economy*** competitive with conventional power.

***Long service life*** between overhauls and low maintenance costs.

THE GARRETT CORPORATION

AiResearch Manufacturing Divisions

*Los Angeles 45, California • Phoenix, Arizona*

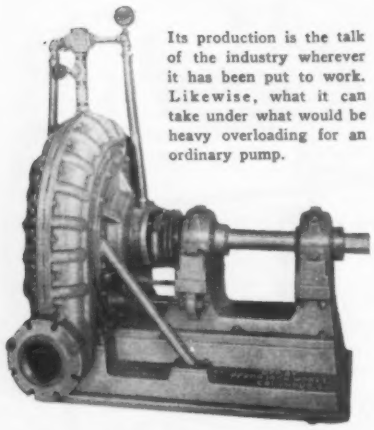
**10,000 AiResearch gas turbines now in use • rugged • versatile • compact • lightweight • dependable**

# LOOKING
## for A BETTER SAND and GRAVEL PUMP?

— No Need To —

## PEKOR'S "TELLTALE"

**TYPE D-T HEAVY DUTY CENTRIFUGAL SAND AND GRAVEL PUMP IS THE BEST**



Its production is the talk of the industry wherever it has been put to work. Likewise, what it can take under what would be heavy overloading for an ordinary pump.

Available with either tough semi-steel or best-in-the-long-run Ni-Hard wearing parts in 4", 6", 8", 6x8" suction and 8x10" suction. Now available also in either alloy, 45 and 90° extra-heavy long-radius flanged elbows.

**AS LOW IN DOWNTIME AS IT IS HIGH IN PRODUCTION**

"TELLTALE" is the only pump that warns when it's time to reline. Air sucked through periphery ports causes pump to lose its prime. Pumping stops. Water leaking through the ports signals that the shell liner and the surrounding belt of packing have worn through.

***Write for FOLDER and Price List***

**PEKOR IRON WORKS, INC.**
*Established 1892*
Phone: FAIRFAX 2-4020
LOCK DRAWER 909
COLUMBUS, GEORGIA

***Enter 170 on card, page 183***


FRANK L. GIORDANO has been named vice-president for Meissner Engineers, Inc., Chicago, Ill.

Mr. Giordano, who brings to the company 20 years experience in the chemical industry, served as director of engineering of Velsicol Chemical Corporation prior to joining MEI.

He has frequently served the American Management Association as a seminar chairman, lecturer and discussion leader in its various plant management and technical organization programs for industry.

ARTHER J. LICHTINGER, executive vice-president of The Wellman Engineering Company, Cleveland, Ohio, was elected president of the Construction Industry Manufacturers Association (CIMA) at the board of directors meeting held in Atlantic City on March 6, 1961.

N. B. (NORM) ENEVOLD, service manager, The Frank G. Hough Co., Libertyville, Ill., is the newly elected 1961 chairman of the CIMA Service Management Council.

D. W. (DON) PABST, service manager, Bucyrus-Erie Company, South Milwaukee, Wis., was elected vice-chairman.

WILLIAM C. DAVIS, an explosives salesman for nearly 44 years for Atlas Chemical Industries, Inc. (formerly Atlas Powder Company), Wilmington, Del., retired recently.

Mr. Davis joined Atlas in 1917 as a salesman from the district office then operated in Philadelphia. Most recently he was assistant director of sales.

A "recognition night" was held for him by present and former associates at the Wilmington Country Club.

Appointment of FRED DOLTON as manager of national account sales for the "Michigan" line of construction machinery is announced by A. E. YORK, sales manager, Construction Machinery Division of Clark Equipment Company, Buchanan, Mich.

Mr Dolton's new duties include coordination of sales between Michigan construction and bulk materials handling equipment distributors throughout the nation and the national account sales force. His headquarters remain at 485 Lexington Ave., New York.

Prior to this assignment, Mr. Dolton was national account sales representative for the Construction Machinery Division of Clark.

F. S. WITTENAUER has been promoted to the position of assistant general sales manager of Republic Rubber Division of Lee Rubber & Tire Corporation, Youngstown, Ohio.

Mr. Wittenauer will assist J. A. MACINTIRE JR., general sales manager, in directing the sales of industrial rubber products.

Mr. Wittenauer joined Republic on October 4, 1939. Most recently he was chief accountant.

Among the companies that have established aid to education programs are Hercules Powder Company, Inc., Wilmington, Del., and The Dow Chemical Company, Midland, Mich.

Hercules, in addition to its other contributions, which include grants in aid to colleges and universities, a system of matching dollar for dollar contributions made by its employees, and scholarships granted under the National 4-H Club's Entomology Program, this year is also participating in the National Merit Scholarship program. The children of Hercules employees, including wholly owned subsidiaries and affiliated companies, who qualify as finalists in the Annual Merit Scholarship Program are eligible for the two four-year scholarships to be granted each year. The grant will amount to at least $250 per year and can be increased to an upper limit of $1,500 per year, according to the need of the student, the total cost of attending the college of his choice, and other factors.

This year's winners are Marion Funderburk, Hattiesburg, Miss., and Richard J. Diephuis, Brunswick, Ga.

Dow is also granting a National Merit Scholarship to the child of a Dow employee, and has a program of aid to education similar to that of Hercules.



***Enter 171 on card, page 183*** →

# WHY IT COSTS LESS TO OWN A CAT GRADER

Most motor graders *look* pretty much alike, no matter who makes them. They handle similar jobs, too, and it isn't always easy to *see* any big difference in the way they handle them. In fact, the manufacturer's suggested prices usually are not greatly different for machines of nearly equal specifications—regardless of the "deal" that may be offered a buyer. But *used* motor graders vary considerably in price. Why?

### The Buyer Determines Price

A used machine is priced at what the buyer is willing to pay . . . it's a measure of what *he* thinks is left in a machine. So, with used equipment, the buyer sets the price. This is clearly demonstrated at used equipment auctions. A check of auction prices throughout the country shows, for example, that the Cat No. 12 Motor Grader brings substantially higher prices than comparable machines of other makes—as much as 80% more. (Only machines of the same age, same condition and with similar attachments were compared.) What makes a Cat Motor Grader more desirable than other makes?

### A Feature That Affects Cost

Any machine is desirable if it is known to be dependable. This reputation can only be the result of true quality design and quality construction. The Cat oil clutch is a good example. It was designed and is built to give long, trouble-free life. But, how well does it do it? Let's examine the records of just one Caterpillar Dealer who has 161 oil clutch-equipped motor graders in his territory. His records show that in four years he has sold only $24.38 worth of parts for motor grader oil clutches! One machine in his territory went 2524 service meter hours without any work on the clutch. Many users report 2000 hours of service before the first adjustment. In 1000 hours of operation only about .0025 inch of wear can be expected—less than the thickness of a human hair. And, since all parts are constantly bathed in oil there is no need for lubrication maintenance. Less wear, less attention mean not only lower total repair costs but more time on the job . . . less down time. Of course, the oil clutch is just one example of many quality features in Cat Graders.

### A Look at Total Cost Records

The cost records of private owners and governmental bodies show which machines cost less. For example, an Indiana county keeps individual cost records on their six motor graders, 14 trucks, three loaders and five tractors. Their records showed that a year-old No. 12 needed only a set of head gaskets and two spark plugs with $25 labor, while two newer graders of another make needed major engine repairs, new clutches and side shift linkage. One town in New Hampshire reports that in over 20,000 hours, their No. 12 has never had a breakdown that held up work more than three hours. Operating costs—24¢ per hour exclusive of fuel, oil and operator. Comparing a Cat No. 12 to another make (after 3½ years' service), the records of an Arkansas county showed a saving of $2478.57 in parts and labor for their No. 12.

### What's in It for You

Others have proved that Cat Motor Graders cost less in the long run because they are built better in the beginning. Your Caterpillar Dealer has additional facts and figures on low-cost operation of Cat Graders in your area. Ask him for free Cost Record Books so that you can keep individual machine records on your equipment. Prove to yourself that it costs less to own a Cat Grader.

Caterpillar Tractor Co.,
General Offices, Peoria, Ill., U. S. A.

**CATERPILLAR**

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

# It's the distance between your plant and ours.

All a matter of numbers and geography, of course. Bemis has seven plants making multiwall bags for the cement industry. And they're strategically located, as the map shows.

So, it follows that we have more bag plants closer to more cement plants than does any other manufacturer. And *short delivery hauls mean fast service.*

Also, a *network* of plants means flexibility . . . if one of our plants gets in a bind, there's another conveniently close to take care of your needs promptly.

As for sales-service, there are 29 Bemis sales offices . . . another big plus in efficiency and convenience.

To round out the picture, Bemis makes any type multiwall bag that the cement industry may need. Like to try our product and service? Just call or write.

*It's just good business to take the shortest distance to service.*

**Bemis**

*where packaging ideas are born*

General Offices—408-Y Pine Street, St. Louis 2

# Giant Foxboro Magnetic Flow Meter measures 11,000 gallons of rock slurry a minute

## Exact metering of slurry velocity prevents pipeline breaks for Geo. M. Brewster

In three and a half months, Geo. M. Brewster & Son, Inc. filled a 65-acre swamp with more than 600,000 cubic yards of gravel — all piped in as slurry.

The rock slurry crackled through a 16″ Foxboro Magnetic Flow Meter at 11,000 gpm. The big meter's job: keep tabs on velocity to prevent line breaks or line plugging.

Metering rock slurry is easy with the Foxboro Magnetic Flow Meter. That's because it has no flow restrictions — no orifice plates, no pressure taps—nothing to foul or plug up. Instead, two electrodes, flush-mounted in the tube wall, measure flow to an accuracy of ±1%.

The Foxboro Magnetic Flow Meter is a simple answer to the "impossible" problem of metering rock slurry.

It's likely to answer your tough flow measurement problems, too. So for more details, write for Bulletin 20-14. The Foxboro Company 229 Norfolk Street, Foxboro, Massachusetts.

**Reg. U. S. Pat. Off.*

Foxboro Dynalog* Recorder receives flow meter signals — enables operator to regulate pumping rate.

Brewster's pipe spewed rock slurry 17 hours a day for 3½ months. Foxboro instruments needed no repairs.

FOXBORO

REG. U. S. PAT. OFF.

**Lightweight dump trailer bodies of Alcoa® Aluminum** haul the biggest payloads possible under Texas gross weight limits. GALION ALLSTEEL BODY COMPANY built these specifically for a highway access project awarded The Neal Trucking Company, San Antonio.

Clean, smooth Alcoa Aluminum body lets material flow freely, evenly. Aluminum can haul a wide range of products, including aggregate or sulfur-bearing coal. It is virtually maintenance-free.

All-aluminum construction gives dump trailer bodies muscle without flab. Bigger loads pay dividends that grow with every extra mile from loading area to job!

Free dump body folder tells how many operators have increased profits by switching to aluminum. For your copy, write Aluminum Company of America, 1792-J Alcoa Building, Pittsburgh 19, Pa.

Member ATA FOUNDATION INC
American Trucking Industry

For exciting drama watch "Alcoa Presents" every Tuesday evening—ABC-TV

**ALCOA ALUMINUM**

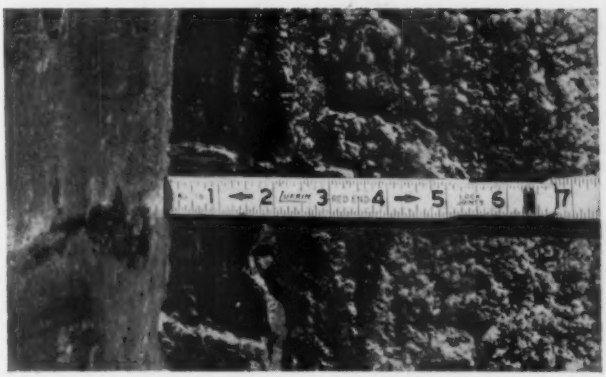
ALUMINUM COMPANY OF AMERICA

# 398 days between hot zone repairs

HOT zone refractories in this cement kiln "held the line" for 398 days between repairs . . . *substantially more than two times longer than usual!* A good portion of the credit for this outstanding run can be traced to a 15-foot panel of fusion-cast Corhart 104 refractory, located strategically at the heart of the hot zone.

The Corhart panel was installed in the kiln's most severe wear area to balance refractory life *throughout* the hot zone. Corhart 104 can do this because it is *not* a conventional refractory . . . it is a patented product made by Corhart's electric melting process. As a result, 104 resists spalling and chemical attack up to two or three times longer than conventional linings.

Corhart balance adds-up to longer continuous production runs, lower repair costs, and much lower refractory-cost-per-ton-of-clinker. Investigate the benefits of Corhart 104 before your next repair. Write: Corhart Refractories Company, Incorporated, 946 Commonwealth Building, Louisville 2, Kentucky.



*Closeup shows thickness and coating of Corhart 104 section after 398 days in operation. This is a high-capacity rotary kiln with a Lepol pre-heater system.*

QUALITY ECONOMY ENDURANCE

**CORHART REFRACTORIES COMPANY**

Subsidiary of Corning Glass Works

The words "Corhart", "ZAC", and "Electrocast" are registered trade marks which indicate manufacture by Corhart Refractories Company, Incorporated.

# THEY LAST LONGER!

## —America's Quality Pillow Blocks

For 37 years Dodge Pillow Blocks with Timken Bearings have been proving their superiority under extreme service conditions in *all* kinds of applications throughout industry.

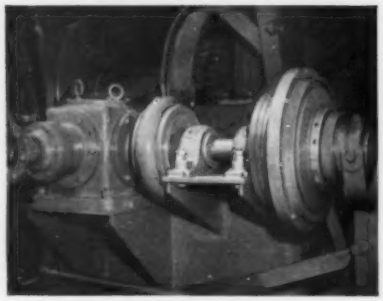
They are noted for their ruggedness. They are built to outlast the demands of the jobs on which they are used. And they carry their loads—radial and thrust, or any combination of the two—with minimum attention.

Dodge takes no chances with the fine precision built into these pillow blocks. They are painstakingly assembled, expertly adjusted, pre-lubricated and SEALED at the factory. You slip them onto your shaft in mint condition—and they stay that way!

There are 5 types of Dodge Pillow Blocks with Timken Bearings—Type E, Double Interlock, Type C (all with shaft sizes from 1-7/16″ to 4-15/16″, and down to 1-3/16″ in Type E), Special Duty with shaft sizes to 12″ and All-Steel—2-15/16″ to 10″. Available from your Dodge Distributor's stock. Call him, or write us for technical bulletin.

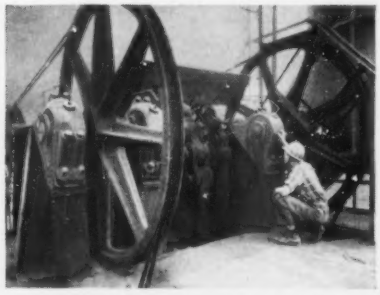
Dodge Manufacturing Corporation, 4000 Union St., Mishawaka, Ind.

*The Products with the Pluses...* **DODGE** *of Mishawaka, Ind.*

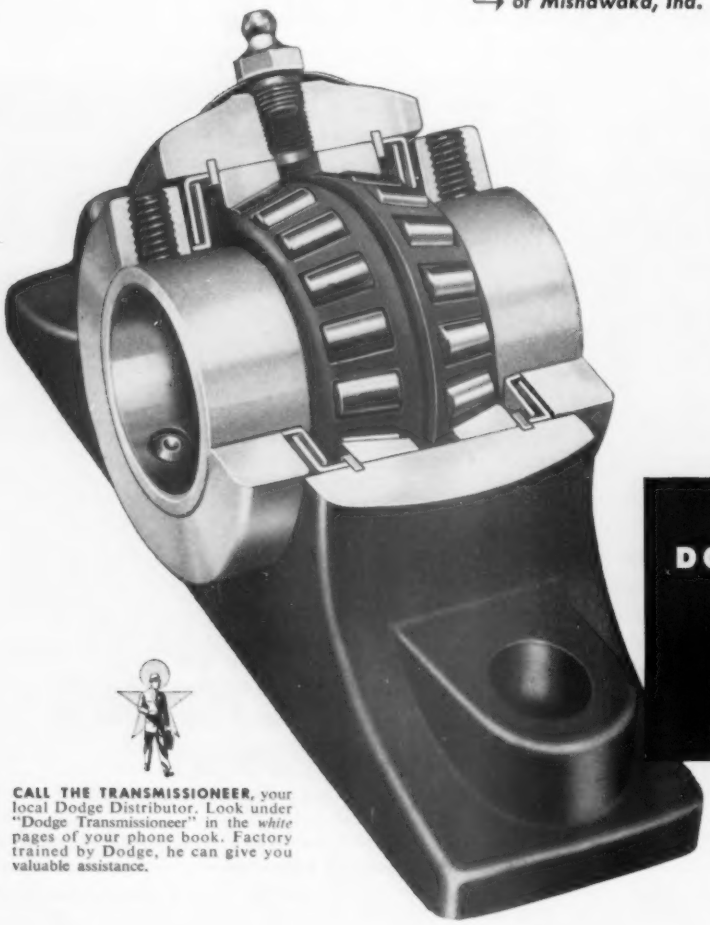


**Dodge Type E Pillow Blocks** with Timken Bearings used for the drive hook-up of a rotary percussion drill.

**Dodge Type C Pillow Block** with Timken Bearings in cement plant — one of 4 in use on elevators since 1930.

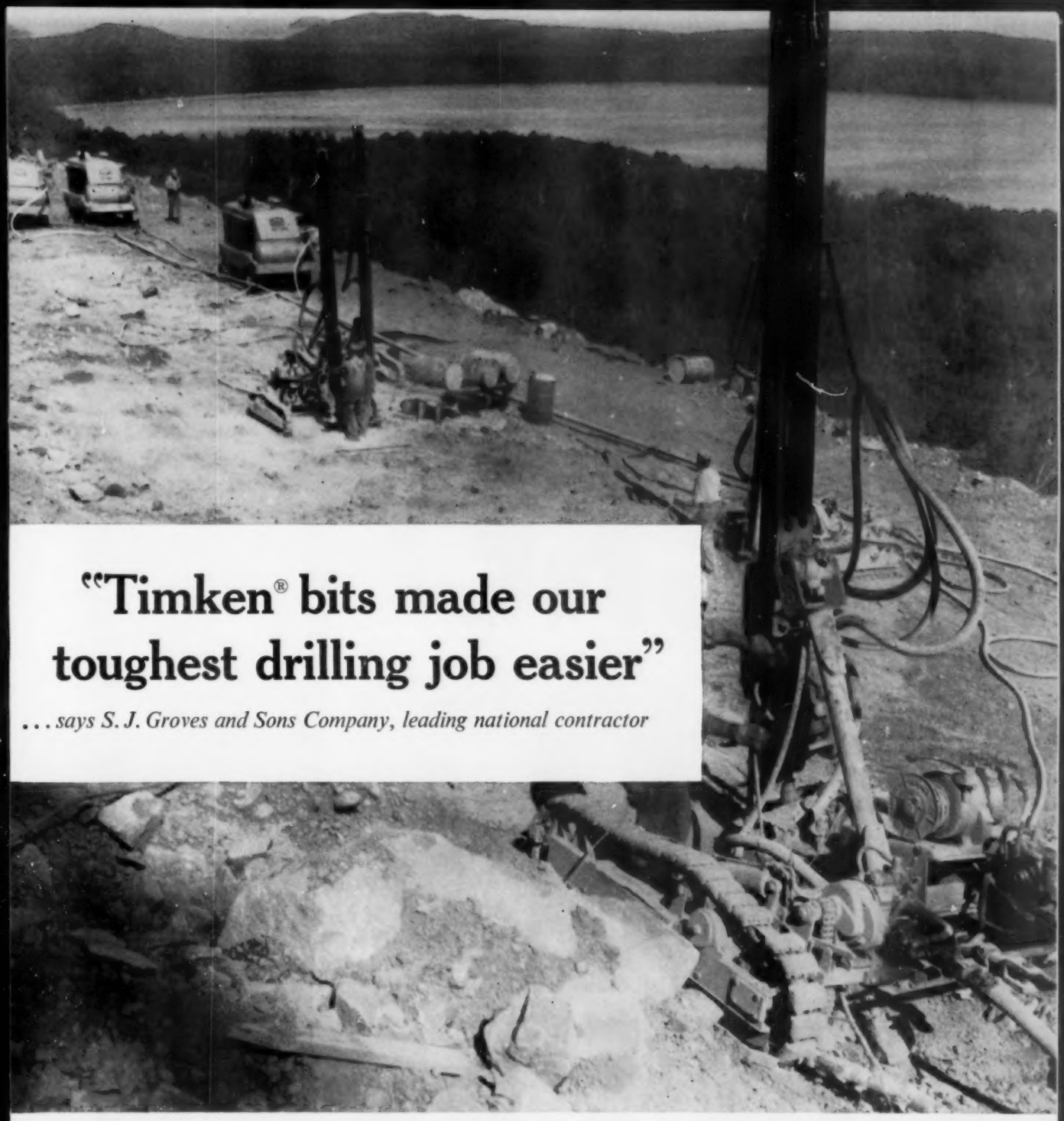


**Dodge Special Duty Pillow Blocks** with Timken Bearings used on a skip hoist bull wheel for a blast furnace.



**DODGE PILLOW BLOCKS with TIMKEN BEARINGS**

**CALL THE TRANSMISSIONEER,** your local Dodge Distributor. Look under "Dodge Transmissioneer" in the *white* pages of your phone book. Factory trained by Dodge, he can give you valuable assistance.



# "Timken® bits made our toughest drilling job easier"

*. . . says S. J. Groves and Sons Company, leading national contractor*

"When we were building part of U.S.Highway 61 in northern Minnesota, we had to drill in tough rock formations—Ely Greenstone, lava basalt and granites", reports H. H. Westphal, Project Manager. "That's why we used Timken® carbide insert bits. They take *all* the punishment, make work easier."

One big reason Timken bits work so well is they have extra tough, special analysis carbide inserts. Another is their 5-front hole design, pioneered by the Timken Company which assures excellent hole cleaning. And on this remote job the helpful service of Timken rock bit engineers was an extra aid in getting the most from Timken bits.

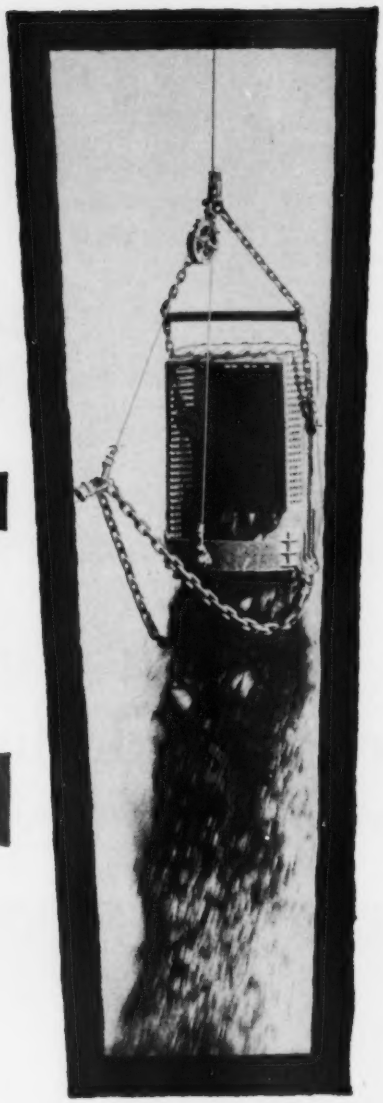
On your jobs, use Timken carbide insert bits for greatest economy in hard, abrasive ground. In softer ground, use Timken all-steel multi-use bits. Both types fit the same drill steel. For the right Timken bit for your drilling, call our rock bit experts. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.

**On-the-spot engineering service with**

**TIMKEN®**

**removable rock bits**

# MORE BITE PER BUCKET

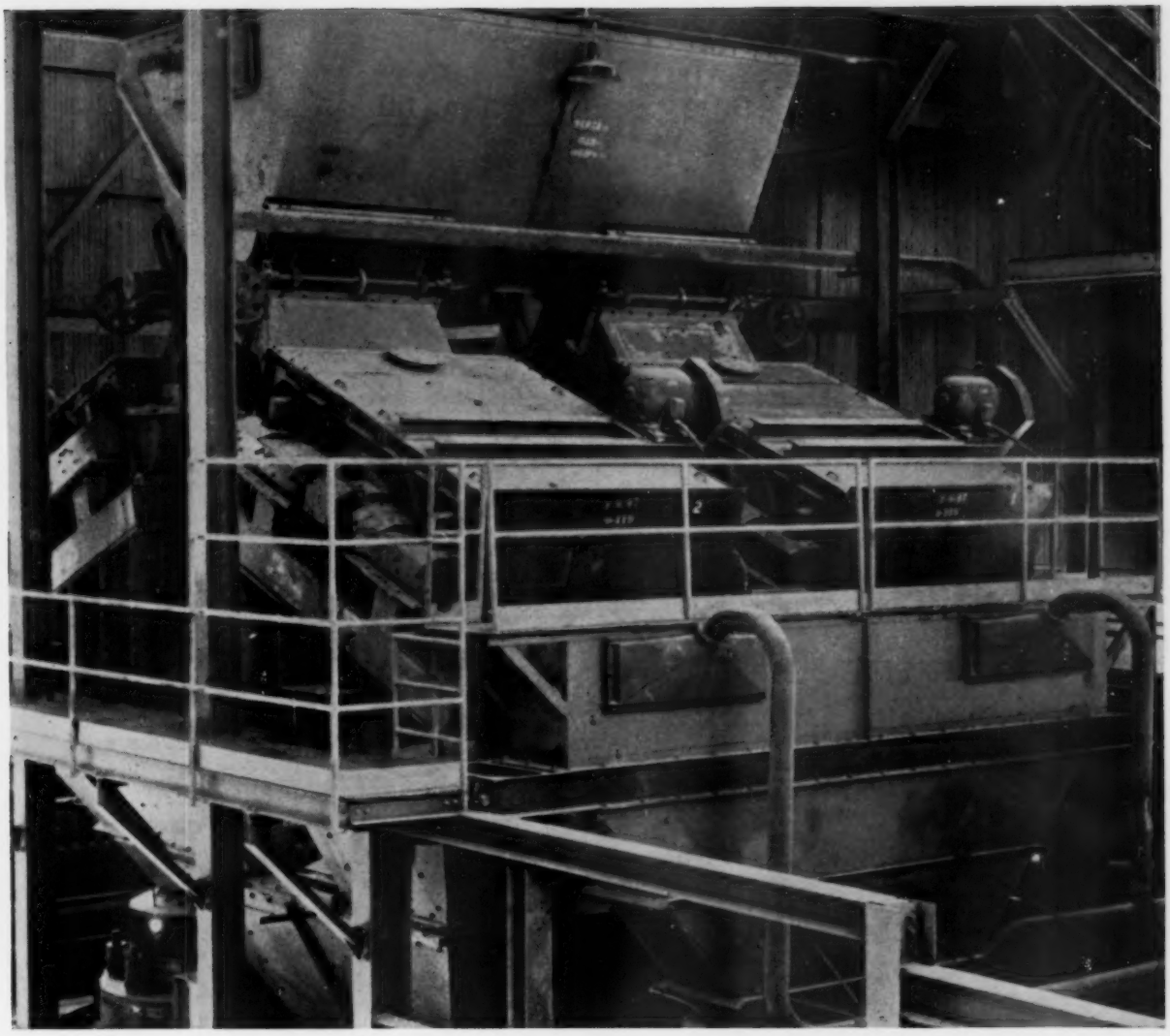


# MORE DIRT PER DOLLAR

Hendrix Lightweight DRAGLINE BUCKETS

*"A Type for Every Digging Purpose"...*
*¼ to 40 Cubic Yards–Perforated or Solid*

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

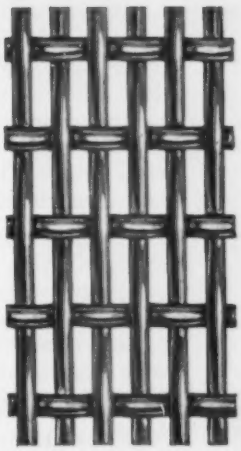


## In 7 years of operation Tyler Ty-Rocks screen 15,000,000 tons of ore at Silver Bell Mine..."maintenance virtually nil"

These four single-surface Ty-Rock screens at the Silver Bell Mine of American Smelting and Refining Company have screened mountains of copper ore. Yet in seven years of operation the company reports "no bearing or other major replacements, and maintenance virtually nil"...a tribute to the fine operating staff and to the design of the equipment.

Tyler vibrating screens handle tremendous outputs with very high reliability. And no matter what your screening requirements, Tyler can handle them: heavy duty mechanical screens, electric screens, economical two-bearing screens. And—Tyler is the world's largest manufacturer of wire cloth and fabricated screen sections.

For screening equipment perfectly matched to your needs check with Tyler.



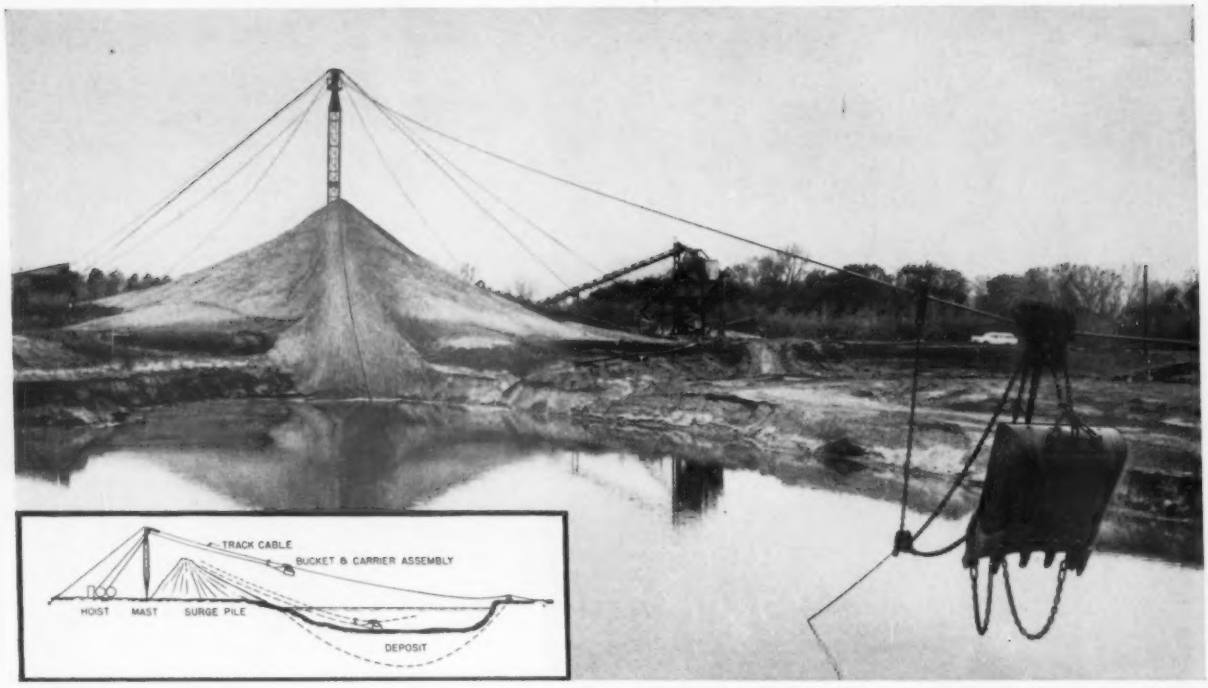
**THE W. S. TYLER COMPANY — Cleveland 14, Ohio**

OFFICES: Atlanta • Boston • Chicago • Dallas • Los Angeles • New York • Philadelphia • Pittsburgh • Salt Lake City • San Francisco

THE W. S. TYLER COMPANY OF CANADA, LIMITED, St. Catharines, Ontario • *Office:* Montreal, Quebec

WOVEN WIRE SCREENS • SCREENING MACHINERY • TESTING SIEVE EQUIPMENT

TYLER




# Dig, Haul And Stockpile For 6 Cents Per Ton...

**Average Cost For Operator's Wages, Power and Maintenance Using a Sauerman Slackline**

If you are planning a new plant or modernizing an old one, consider the economies of digging and hauling your raw material with a Slackline Cableway. Direct operating costs run about 6 cents per ton for operator's wages, power and maintenance when working average deposits and hauling to a surge pile.

The Slackline Cableway's handling capacity is governed by haul distance and digging depth. This allows fast, short hauls when maximum tonnage is needed to meet demands. Conversely, when time permits, the reach of the Slackline can be stretched to the extreme limits of the deposit to rebuild or create a reserve pile. The use of a surge pile in conjunction with a Slackline enables operations to continue when plant processing is halted due to weather or stoppage. This reserve of material also makes it unnecessary for the Slackline to continuously match plant tonnage requirements.

A Slackline can begin operation at ground level and dig to depths which cannot be reached with other equipment. It digs 125 ft. below water and hauls up to 1000 ft. This deep digging assures maximum clean-up of your deposit. The additional material obtainable with a Slackline can keep your plant running longer without expensive relocations of equipment.

Call or write for more information on the low operating costs and long service life of a Slackline Cableway. Request Catalog C for general information.

Slackline Bucket dumps automatically over surge pile. Material is dug from a deep deposit on an 800 ft. operating span.

**SAUERMAN BROS., INC.**

**634 So. 28th Avenue, Bellwood, Illinois**
Llnden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent DragScrapers • Slackline and Tautline Cableways • Durolite Blocks

*New Series 100 Hammerdril*

# chip size proves Hammerdril puts more *bite* in your bit because it cleans as it drills

When it comes to chips, think big. Big chips are a sure sign of economical drilling action, the kind that saves air, speeds drilling rate. With the Series 100 Hammerdril® air either drills or cleans. You can start at once with this dependable bottom hole pneumatic impact tool on your present rig and 100 psi compressor. Simply adjust the Hammerdril with the proper positive choke to suit your compressor. Then dig in, using the Mission Hammerbit®. The heavy tungsten-carbide inserts can be dressed in the field.

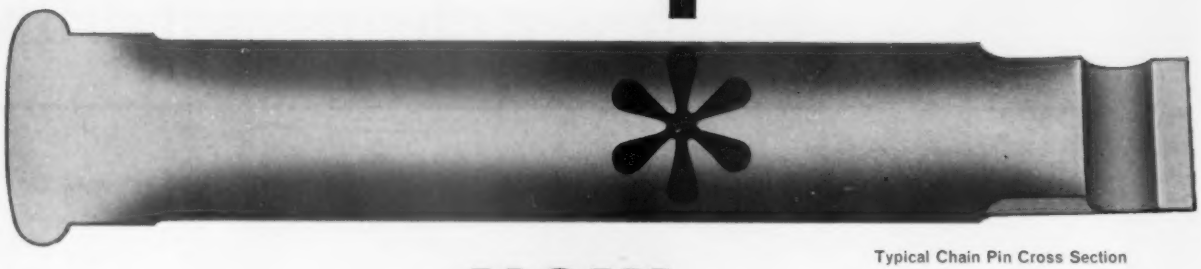
*Write for new bulletin.*

MISSION MANUFACTURING CO.

HAMMERDRIL

P. O. BOX 4209 · HOUSTON, TEXAS / OVER THIRTY YEARS OF DRILLING RESEARCH

# REX ARMOR CASE

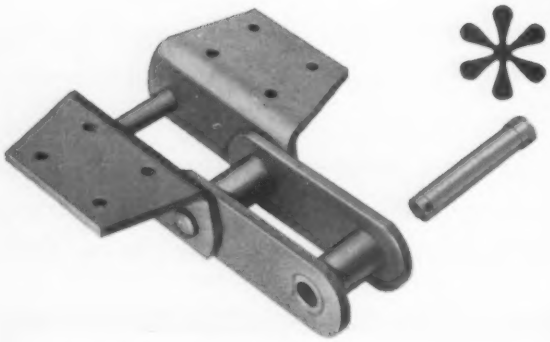


Typical Chain Pin Cross Section

## NOW... *Rex deep-hardens chain pins all around for super chain life!*

**ARMOR CASE IS THE NAME.** It's an entirely new super-hardening process for chain pins and rivets. ARMOR CASE—another first and only in the chain industry by Rex!

Now, by this exclusive heat-treating process, Rex elevator chain pins and rivets are hardened their full length, *fully around the pin or rivet circumference.* Moreover, this super-hardness is more uniform and of a substantially deeper case than was previously possible to attain.



Rex X859-K44 Chabelco Chain

**Benefits to you in this new Rex pin and rivet design!**

- REX ARMOR CASE delivers added resistance to fatigue in the corrosive environment of wet slurry applications.
- REX ARMOR CASE gives record joint wear-resistance in areas of severe abrasion service and corrosive environments.
- REX ARMOR CASE improves the mechanical fatigue resistance of chain pins and rivets.
- REX ARMOR CASE is available to you *now* at no extra cost!

Now reduce your conveyor and elevator down time and high-up chain replacement costs with new, exclusive REX ARMOR CASE pins and rivets. *IT LASTS LONGER!* Talk to your Rex distributor or write today for complete details. CHAIN Belt Company, 4604 W. Greenfield Ave., Milwaukee 1, Wis. In Canada: Rex Chainbelt (Canada) Ltd., Toronto and Montreal.

REX®
CHAIN BELT COMPANY

# more information, please

**Use postcard to receive literature or details on new equipment and products reported in this issue.**

HIGHER PRODUCTION and more profit by using *Universal Engineering Corporation* systemized portable plants are demonstrated in Bulletin CC-1-61, available from the company. **(301)**

CRUSHER AND SCREEN PLANT LAYOUTS in a 9- x 11¾-in. portfolio are available to processing and/or plant and consulting engineers from *Allis-Chalmers Manufacturing Company* sales representatives. The layouts cover first, second, and third stage crushing operations with screen arrangements. Selection guides for determining proper equipment are included. The drawings are scaled for use as templates. **(302)**

"COMPLETE CONTROL WITH TWO-WAY RADIO," published by *General Electric*, describes the integration by mobile communications of any business where vehicles are used. All of a company's vehicles can be put on a single system, or set up on separate networks. **(303)**

HOW A NEW SILICON-RECTIFIER conversion unit for electrostatic precipitators can perform 25 percent more efficiently and pay for itself is explained in a 4-page brochure published by *Buell Engineering Co., Inc.* **(304)**

BELT PROPELLED TRIPPER DUAL ROLL IDLERS manufactured by *Finco inc.* are described in an illustrated folder. Specifications and capacities are tabulated. **(305)**

A UNIVERSAL DIESEL ENGINE STAND, J 6837, is described in a sheet from the *Kent-Moore Organization, Inc.* The field-tested unit is portable and has a convenient working height. A large-capacity hydraulic pump lifts the side-mounted engine to a horizontal position, where it can be turned by hand, locked in

FIRST CLASS
PERMIT NO. 44
CHICAGO, ILL.

BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

—POSTAGE WILL BE PAID BY—

**Pit and Quarry Publications**
431 South Dearborn Street
CHICAGO 5, ILL., U.S.A.

**SEPTEMBER** **PIT AND QUARRY** **1961**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

Void after 60 days.

_____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

We produce _____

**SEPTEMBER** **PIT AND QUARRY** **1961**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

Void after 60 days.

_____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

We produce _____

# more information, please

**Use postcard to receive literature or details on new equipment and products reported in this issue.**

## NEW SUBSCRIPTION ORDER FORM

Send PIT AND QUARRY to me for

____One Year $3* ____Two Years $5 ____Three Years $6

____Payment enclosed ____Bill me ____Bill company

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

Type of business and products _____

*U. S., U. S. Possessions, and Canada only.
Pan American countries, $10 a year; elsewhere, $15 a year.

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**Pit and Quarry Publications**
431 South Dearborn Street
CHICAGO 5, ILL., U.S.A.

the desired position, and lowered to working height. When the engine is in the horizontal position assembly and disassembly operations are reported to be a one-man operation. **(306)**

SELECTION OF MULTIPLE V-BELTS for long run economy can be simplified by tables provided in Bulletin DH900, published by *The Gates Rubber Company*. Such "Service Level" factors as r.p.m., design horsepower, and cost are listed. **(307)**

REBUILDING UNITS, such as double-arc, double-spindle roller and idler rebuilders; combination grouser shoe and sprocket reconditioners; track link welders; flux grinders; roller boring tools; and push-and-pull roller and idler disassembly and assembly presses are set forth in a brochure published by *Victor Equipment Company*. **(308)**

DUST COLLECTION of fluidized solids systems receiver bins with large plenum areas is described in a specification sheet released by *Mikro-Products Pulverizing Machinery Company*, a division of American-Marietta Company. Filter areas range from 25 sq. ft. to 63 sq. ft. **(309)**

OFFSET SIDE BAR CHAINS for heavy duty, offered by *Acme Chain Corporation*, are tabulated in Bulletin No. 8, from the company. Prices and dimensions are given for such sizes as 1¼-, 1½-, 1¾-, and 2-in. pitch in single, double, triple, and quadruple widths. **(310)**

**TECHNICAL LITERATURE**
offered here is free
unless otherwise noted.

# Primacord®

## with Primacord M/S Connectors for accurate dependable millisecond surface-delay blasting

You can enjoy the advantages of delay blasting without the hazards of sensitive delays in the holes. In open pit mines, quarries and construction blasting – medium to large diameter holes – use the Primacord System of initiation with Primacord M/S Connectors tied into the Primacord trunklines.

An infinite number of delay firing patterns is possible. And the size or length of a blast is limited only by the blast area.

The Primacord M/S Connector* is available through all explosives manufacturers. It is an economical and dependable non-electric delay device that is insensitive to static or stray electric currents. Made to provide delay periods of 5, 9 or 17 milliseconds, several Connectors may be used in series when longer delays are required.

Primacord Detonating Fuse has proved its outstanding advantages over many years of use:

1. It is simple, easy and economical to use.
2. It cannot be set off by sparks or stray electrical currents – or by normal vibration, friction or shock.
3. It detonates at a speed of almost four miles a second along its entire length.
4. Primacord has a minimum initiating strength of a blasting cap at all points.

Primacord is available in a number of standard and special types developed to meet varying needs. For further information consult your explosives manufacturer or write

*Manufactured by E. I. du Pont de Nemours & Company (Inc.)

**THE ENSIGN-BICKFORD COMPANY**
Simsbury, Connecticut • *Since 1836*
THERE IS A TYPE OF PRIMACORD® FOR EVERY TYPE OF BLASTING

E-B

***Free!*** NEW GUIDE AND CONDENSED MANUAL: "PRIMACORD DETONATING FUSE . . . WHAT IT IS . . . HOW TO USE IT." ASK YOUR EXPLOSIVES MANUFACTURER OR WRITE US GIVING YOUR COMPANY NAME.

# NOW! GAR WOOD OFFERS TO HELP YOU

### *Free-Flowing Materials Hauled Safely in Enclosed Hoppers*

Bulk handling of cement, lime, chemicals, and other free-flowing materials can be hauled fast and inexpensively in Gar Wood enclosed hoppers—with no chance of damage or loss from spillage or contamination.

These hopper trailers let you load and unload in record time, haul bigger payloads over the highways, schedule more trips per year.

Enclosed Gar Wood hoppers are available as train or semi-trailer units, equipped with one, two, or three discharge gates.

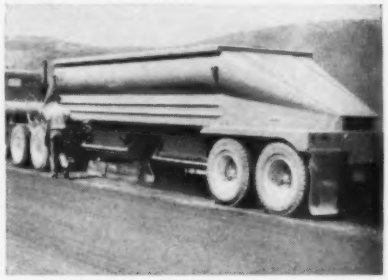
### GAR WOOD HOPPER TRAIN INCREASES HAULING CAPACITY

This big, rugged double hopper train carries a total of 20.5 cubic yards. Ideally suited for general contracting use with aggregate, sand, fill, and spoil materials. Air-powered clamshell gates allow quick dumping at high speeds. Material can be pit-dumped, windrowed to specifications, or stockpiled.

## TRAILERS CUSTOMIZED FROM STANDARD EQUIPMENT TO MEET EVERY RESTRICTION, EVERY APPLICATION

Though Gar Wood hopper trailers are available in a wide range of open and closed models for train and semi-trailer operation, with a complete line of discharge gates, they may also be customized to your exact road-weight restrictions, your exact application.

This design versatility allows you not only absolute maximum payloads, but faster, more efficient operation at minimum maintenance and operating costs. You get a unit specifically tailored to bring you the greatest possible revenue within your specific field of operation.



GAR WOOD "EASTERNER" hopper trailer gives you powerful tandem-drive traction plus far greater legal payloads. This unique combination produces extra hauling revenue for both on- and off-highway work.

### New York Contractor Earns 45% More With "EASTERNER"

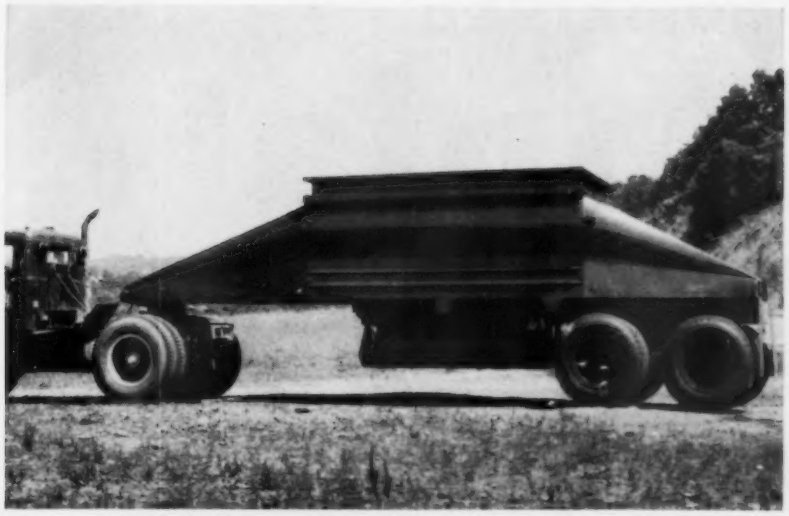
A recent on-the-job Payload Analysis in New York State compared the performance of a tandem rear dump truck and a Gar Wood "Easterner" hopper trailer, both owned by the same contractor. The job involved hauling gravel for road construction.

The figures shown were not drawn up in an office, they were compiled with the contractor in the field. The contractor is now replacing more of his rear dumps with Gar Wood "Easterners."

| | HOPPER TRAILER | REAR DUMP TRUCK |
|---|---|---|
| Legal Yards Per Trip | 15 | 10½ |
| Yard-Miles Per Trip | 105 | 73.5 |
| Revenue Per Trip, Per Unit | $13.20 | $9.11 |
| Revenue Per Day | $158.40 | $109.32 |
| Working Days Per Year | 120 | |
| Extra Revenue Per Day | $49.08 | |
| EXTRA REVENUE PER YEAR, PER UNIT | $5,889.60 | |

# FREE PAYLOAD ANALYSIS HAUL MORE-EARN MORE!

## *New Service Can Help You Greatly Increase Your Hauling Income*



**GAR WOOD MONO-SHELL HOPPER TRAILERS** are sold and serviced by the nation's largest network of experienced truck equipment specialists. These Gar Wood distributors know your local hauling problems, understand your state axle-weight laws.

WAYNE, MICHIGAN—Gar Wood Industries, world's pioneer truck equipment firm, announces an exclusive new service that determines, in dollars and cents, the amount of additional income you can earn with Gar Wood Mono-Shell hopper trailers, *and then helps you earn it!*

Gar Wood engineers first make a Free Payload Analysis of your operation. They calculate the hauling revenue for each of your present units by yard-mile, day, and year, and compare the data with the established nine-year performance record of Gar Wood hoppers. And then, regardless of your hauling job, Gar Wood will *show* you how to use hoppers to earn that extra income.

The results are often amazing. To date, Gar Wood has been able to offer haulers as much as *45% extra revenue per year* (see story opposite page) plus significant increases in operating efficiency.

*Think what 45% more revenue, practically all pure profit, could mean on your own job. Then mail the coupon below.*

## HOPPERS ELIMINATE FINES, RAISE PAYLOADS, LET YOU OPERATE LEGALLY AT A PROFIT

Whatever your regional requirements, Gar Wood hoppers let you haul legal payloads not obtainable with any other equipment, and eliminate profit-slashing overload fines. The reasons: exclusive Mono-Shell construction that cuts dead weight to a minimum, and exclusive mounting techniques that distribute more weight over a much greater axle span.

Gar Wood has employed these methods in designing hoppers for on- and off-highway work, in hoppers for hauling all types of materials, in hoppers specifically tailored to axle-weight laws in every state in the country.

Start taking advantage of this opportunity to increase your profits now. Let Gar Wood show you how hoppers will give you a legal operation that is faster, more efficient, more productive—an operation that will let you make much more money.

### SEND FOR YOUR FREE PAYLOAD ANALYSIS TODAY

Name _____

Address _____

City _____ State _____

☐ SEND FREE LITERATURE

☐ SEND FREE PAYLOAD ANALYSIS FOR THE FOLLOWING:

Type of material hauled _____

Present type of equipment _____

Tare weight of present equipment _____

Tons hauled per trip _____

Miles per trip (one way) _____

Send coupon to:

**GAR WOOD INDUSTRIES, INC.**

Customer Service Dept.

Wayne, Michigan

NATIONAL READY MIXED CONCRETE ASSOCIATION NRMCA

32nd ANNUAL CONVENTION

NSGA NATIONAL SAND AND GRAVEL ASSOCIATION

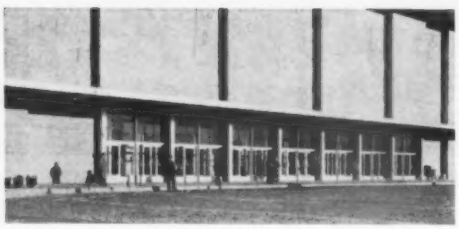
46th ANNUAL CONVENTION

ALL
UNDER ONE ROOF

COMBINED

# Biennial Show

AT NEW McCORMICK PLACE • CHICAGO



**TIME:** February 5-8, 1962 • **PLACE:** One of the world's biggest, finest exposition centers.

- **ACRES OF NEW IDEAS.** More than 160 blue ribbon exhibitors. New equipment . . . new methods . . . new ideas. All to help you cut costs . . . increase efficiency and profits.
- **FREE TIME TO SEE SHOW.** No convention meetings all day Monday . . . or Tuesday and Wednesday afternoons. Plenty of time to see all exhibits, exchange ideas.
- **FREE, FAST TRANSPORTATION** between Conrad Hilton and McCormick Place. Buses scheduled every three minutes during rush hours. Every ten minutes throughout day.
- **EXCELLENT DINING FACILITIES.** No need to go out to eat. McCormick Place has three restaurants, one cafeteria. All large and modern. Prompt service, excellent food.
- **REGISTRATION AND ADMISSION ARE FREE** to users as well as producers of sand, gravel or ready mixed concrete.

**PLAN NOW TO SEE THIS GREAT COMBINED INDUSTRIES SHOW**

# Specify Anaconda all Butyl Shovel Cable

This new shovel cable—the toughest in the industry—cuts shovel downtime. Months of torture testing throughout the country have proved it.

It endured the rugged cold of the Mesabi and the punishing heat of Florida's phosphate mines.

It was twisted, kinked, soaked, crushed and run over.

Its new Butyl *jacket* is the reason for this extra durability in the face of the effects of ozone and moisture and extreme physical punishment.

It is especially compounded to combine flexibility at low temperatures with thermal stability at high temperatures.

Here are other construction features which contribute to this cable's unequalled service record:

1. Anaconda's rubber-core grounding conductors offer a cushioning effect which minimizes pinching and wire breaking and offers greater ground contact protection.
2. Special shielding—a combination of copper cross-braided with cotton—eliminates chafing (and makes splicing faster and easier too).
3. Insulation is a special high-grade Butyl that withstands ozone, heat, and moisture.

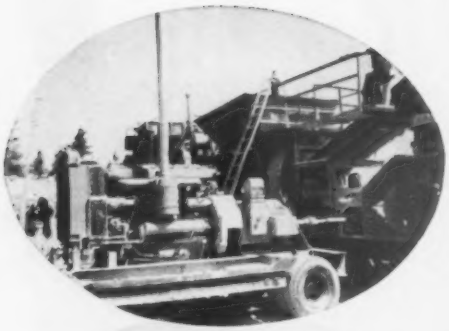
Check all the features of this job-proved new shovel cable—they add up to extra cable life, less downtime, and dollar savings. Contact Department EFL-1-PQ, Anaconda Wire and Cable Company, 25 Broadway, New York 4, N. Y.

61255

ASK THE MAN FROM

**ANACONDA®**

ABOUT ALL-BUTYL SHOVEL CABLE



## *Economize with*

# MURPHY DIESEL

## *Dependable* Job-Site

# ELECTRIC POWER

**Murphy Diesel Mech-Elec Unit** (upper left) supplies electric and mechanical power simultaneously or separately for a portable aggregate plant in the East.

**Murphy Diesel Generator Set** (left) provides inexpensive dependable electric power for a portable asphalt plant in New Hampshire.

**Murphy Diesel Generator Set** (below) reduces power-plant maintenance costs on an all-electric scalping plant in South Dakota. A 121 KW Murphy powers the plant.

Whatever *your* job, Murphy Diesels' economical operation and dependability for heavy-duty service keep costs low and profits high. Ask your Murphy Diesel Dealer about the advantages of Murphy Power for your plant.

MURPHY DIESEL

**PUTS MORE POWER INTO THE JOB**

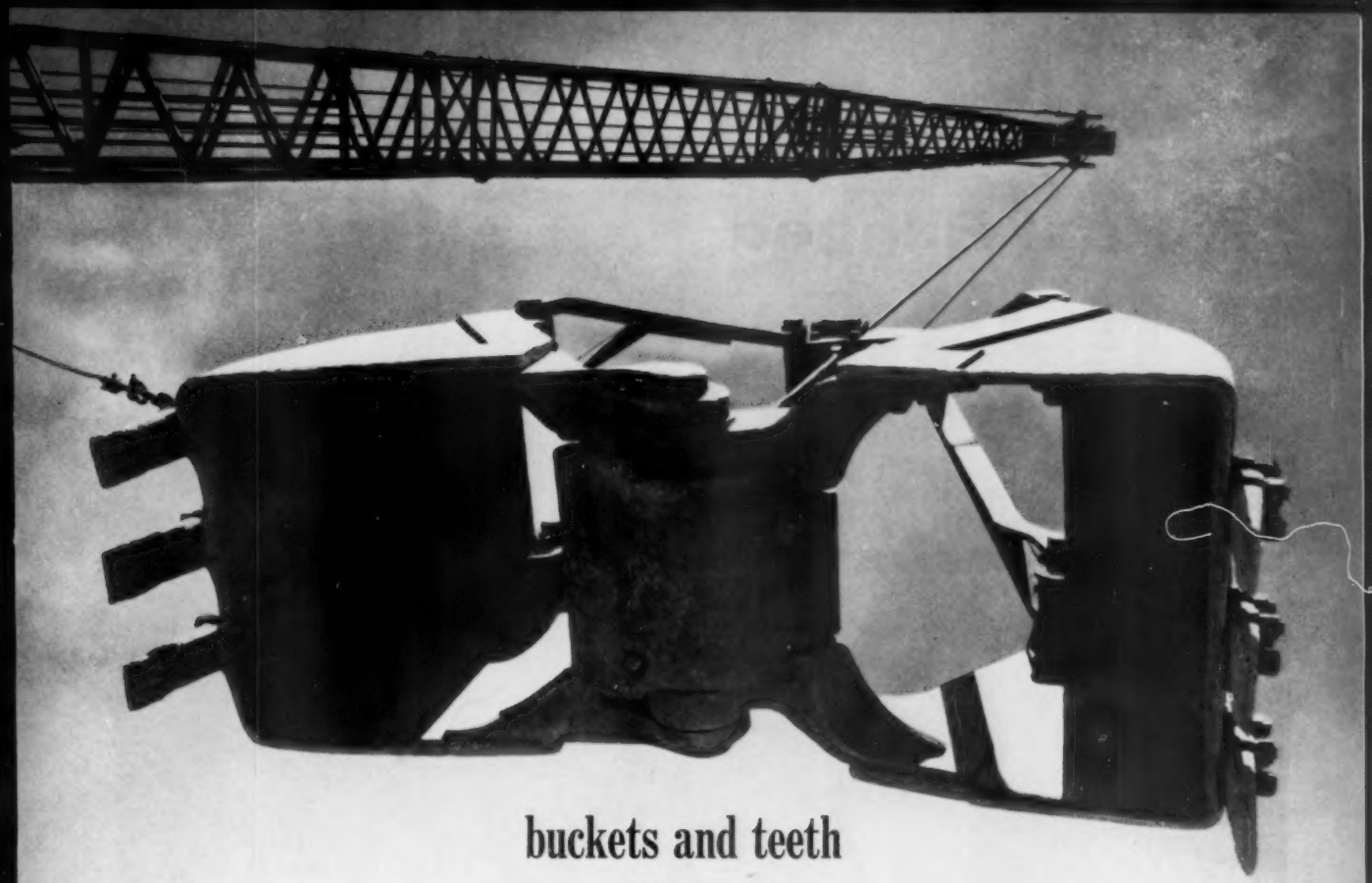
MP Series Murphy Diesel engines and power units are available in sizes from 105 to 420 HP with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 70 to 227 K.W.

## MURPHY DIESEL COMPANY

**5307 W. Burnham St., Milwaukee, Wisconsin**

**SALES . . . PARTS . . . SERVICE**

**Throughout the Nation**



buckets and teeth
blades
tracks
sprockets
crushers

# hardsurface it with an Airco Electrode or Wire —and do the job faster

You put your equipment back into action with confidence when you hardsurface it with an Airco electrode . . . or Airco automatic or semi-automatic wire.

Because the Airco line is *complete* you can always find an Airco electrode or wire designed especially to handle your most specialized job.

Does the job call for uniform hardness over the entire area, plus welder appeal? You'll find the right electrode or wire in the Airco line. Do you need an all position electrode or wire, with outstanding arc stability? You'll find it in the Airco line. Want to make maximum coverage? You get it with the Airco line.

To cut downtime . . . and lengthen the life of your costly equipment...hardsurface it with an Airco electrode or wire.

**Special:** — Send for a free copy of the new catalog, "Airco Hardfacing Electrodes and Wire." It illustrates 105 hardsurfacing applications, recommends the electrode or wire to use for each, gives characteristics and chemistry, and outlines procedure step by step. Never before has so much know-how been packed into such easy-to-read form.

Call Airco or look in your Classified Telephone Directory under "Welding Equipment and Supplies" for your nearest Authorized Airco Distributor.

Air Reduction Sales Company, 150 E. 42nd St., New York 17, N. Y.

Please send me the new Airco Hardfacing Electrode and Wire catalog.

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# "A Real Rugged ROCK BRUISER"

. . . say field reports on this 1½-yd. BAY CITY Model 72 shovel. It's one of two owned by the Valley Forge Stone Co., Malvern, Pa. This firm switched to BAY CITY after owning competitive makes for over 15 years.

From the treads up, the BAY CITY 72 is a heavy-duty rig with proven high output performance in tough rock. Look first at the lower works. The unit-cast, heat treated, alloy steel base assembly is welded to sturdy H-beam axles and bolted firmly to long, wide crawler frames. Dependability is the keynote throughout. Move up to the heavy-duty alloy steel rotating base casting. It provides a firm, solid foundation for deck machinery and engine . . . is strongly ribbed and cross braced . . . amply withstands the shock and vibrations of tough rock digging. The hoist and front drum assemblies are packed with power features such as helical gear drive, ball bearing-mounted drums and shafts, and large diameter, power booster clutches.

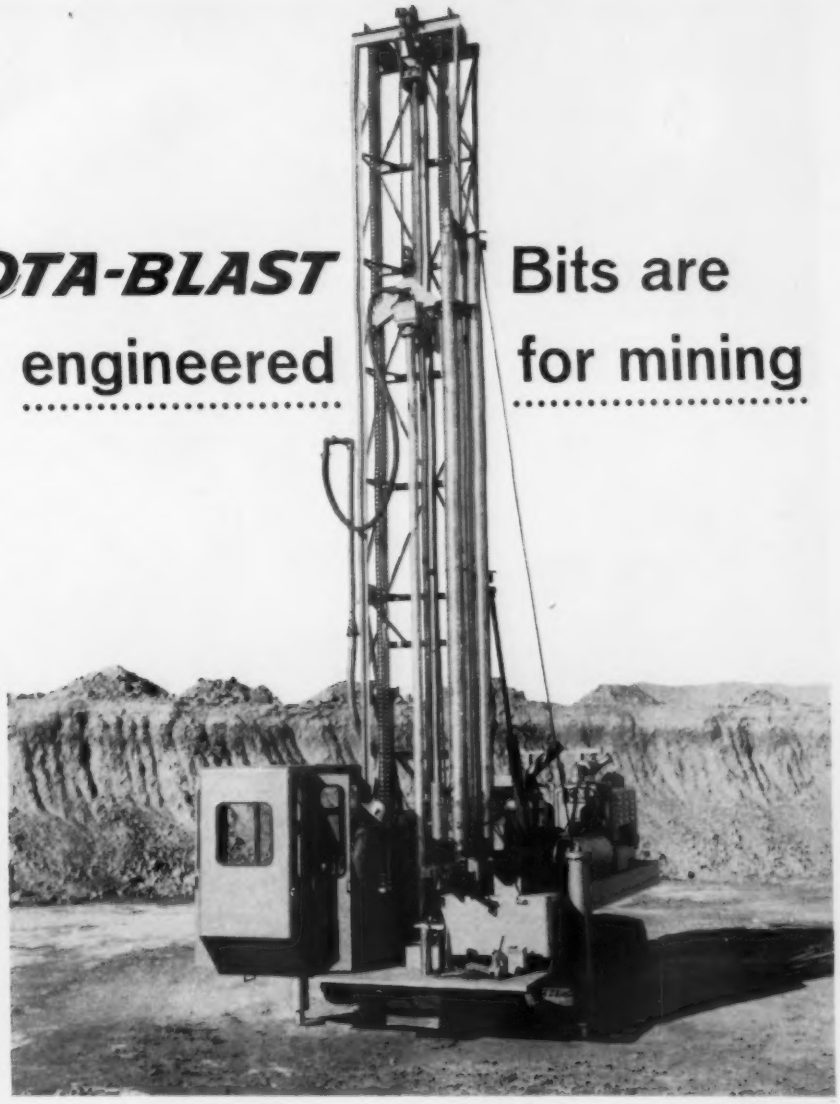
And, the BAY CITY 72 gives you a shovel front that's always ready for heavy digging. With the rock-type dipper actuated by a one-piece continuous chain, crowd action is positive and independent. Reverse crowd is power operated, providing complete control under all conditions of the digging cycle. Easy, in-the-field convertibility to dragline and clamshell adds versatility to your loading operations.

Your BAY CITY dealer has more Model 72 facts. Ask him for the illustrated Series 70 catalog containing information on design and construction features, and for copies of specification and working range bulletins. Do it soon!

**BAY CITY SHOVELS, INC.**
2611-E Center Ave.
BAY CITY, MICHIGAN

*a subsidiary of Unit Crane & Shovel Corp.*

# HUGHES *ROTA-BLAST* Bits are engineered for mining



*Type* **HH**
***ROTA-BLAST***
for extremely hard abrasive rock
(Taconite, quartzite)

*Type* **H**
***ROTA-BLAST***
for hard rock
(Siliceous limestone, dolomite, sandstone, granite)

*Type* **M**
***ROTA-BLAST***
for medium rock
(Limestone, sandstone, sandy shales)

*Type* **S**
***ROTA-BLAST***
for soft formations
(Calcite, shale, clay)

Faster blast-hole drilling means more production, lower costs. In areas where blast hole drilling is the toughest, Hughes "Rota-Blast" rock bits and rotary drilling techniques, developed in close co-operation with operators and drill manufacturers, are increasing footage and penetration rate as much as 100% and more.

Your Hughes representative can recommend the "Rota-Blast" bit best suited to your operation, and is also qualified to offer you assistance in your drilling program. Back of his recommendations are more than a half-century of specialized rotary rock bit experience, and the world's largest rock bit manufacturing plant.

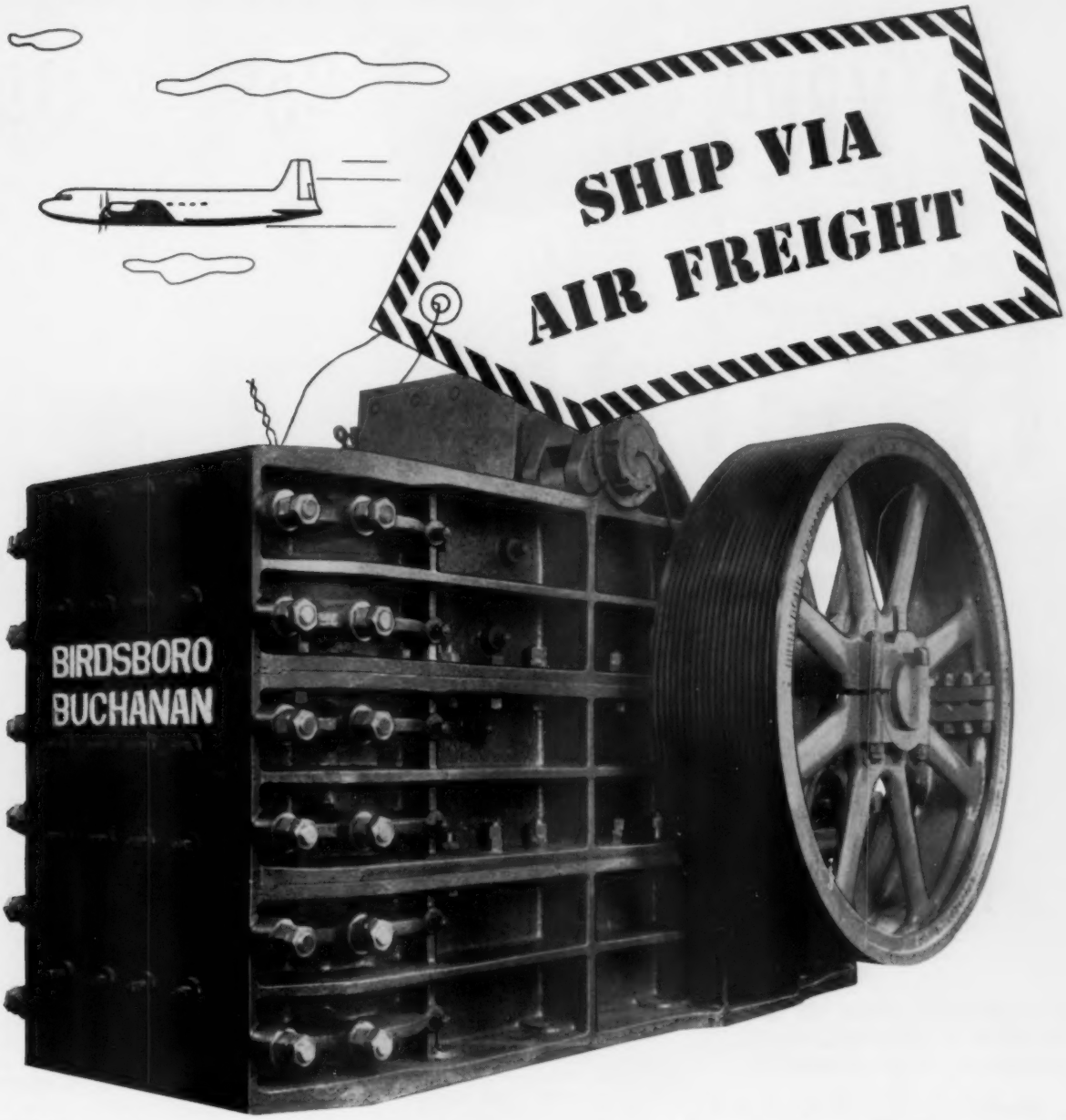
**HUGHES®**
**industrial products**
HUGHES TOOL COMPANY • HOUSTON, TEXAS

## have earned customer acceptance

More than a million tons of Sheffield Grinding Balls of all kinds have proved their worth, throughout the world. This record of performance is no accident. It's the result of tight, quality control of alloying, heat-treating and forging — every step of the way. Sheffield Moly-Cop Balls keep their sphericity longer, give a better, more uniform grind, at the lowest possible cost per ton. No wonder Sheffield Grinding Balls are the standard of comparison, around the world. **Sheffield Division, Armco Steel Corporation, Sheffield Station, Kansas City 25, Mo.**

**SHEFFIELD**
**MOLY-COP**
**Grinding Balls**

**ARMCO Sheffield Division**




# Who'd ever ship a primary jaw crusher this way?

■ You would—if there were no other way to get it into a remote mining area. And chances are the crusher would be a Birdsboro-Buchanan. For Birdsboro-Buchanan's *sectionalized frame design* means easy field assembly, fast start-ups, quick profits for you. For full details, get in touch with Birdsboro. Write: *Sales Department, Engineering Department & Mfg. Plant:* Birdsboro, Pa., *District Office:* Pittsburgh, Pa.

**Canadian Representative & Manufacturer: John Inglis Co., Ltd., Toronto, Canada**

*World-Wide Agent Representation.* Contact home office for nearest representative.

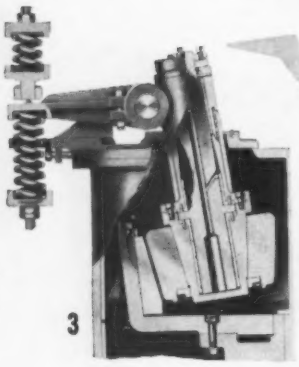
CR-34-61

**BIRDSBORO**
**CORPORATION** BIRDSBORO, PENNA.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • ROLLS • ELECTRIC STEEL CASTINGS: Carbon, Low Alloy and STAINLESS STEEL

# RAYMOND BOWL MILLS

1



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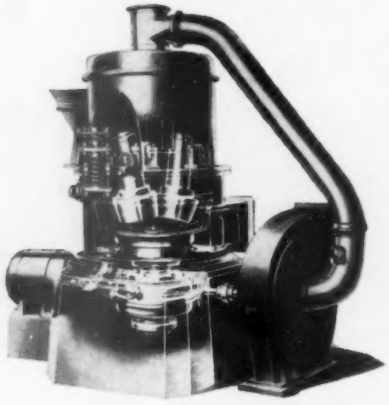
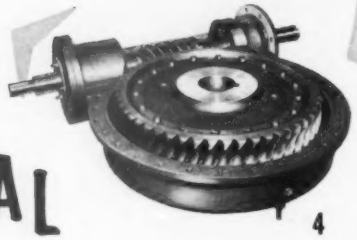


2

## almost PERPETUAL MOTION...



4

**THE CONTINUOUS, ROUND THE CLOCK, OPERATION OF RAYMOND BOWL MILLS BORDERS ON PERFECT AUTOMATION.**

Capacities of over 18 million tons annually, with 390 units in use on kiln firing alone, is the record set by Raymond Bowl Mills in the handling of coal . . . any grade or moisture content.

Bowl Mills have high availability and wide range capacity.

Flexible control of a noiseless and dustless operation with low maintenance is assured.

Widespread application has been made on rotary kilns for Cement, Lime, Dolomite and other products. Kilns provide increased production, superior product quality, lesser fuel costs and maximum burning efficiency with overall operating economy.

These important parts are largely responsible for maintaining the constant, smooth, highly efficient performance of the Mill.

1. The Revolving Bowl directs the coal between the rolls and the grinding ring by centrifugal force, providing maximum grinding efficiency with minimum load of unground material.

2. Tramp Iron, Pyrite, Slate and other foreign materials are automatically and continuously removed from the mill through the Reject Spout.

3. The Journal Assembly has trunnion and spring pressure mechanism for adjustment of grinding pressure between roll and bull ring. The sliding saddle on top plate is adjustable from outside to align roll and compensate for any wear.

4. A precision built Worm Gear Drive that runs in a bath of oil, giving a smooth, quiet, vibrationless operation.

The Bowl Mill is a rigidly constructed, proven machine with a renowned record of performance, backed by an organization with over a half-century of experience in manufacturing pulverizing equipment.

**Having a MILL under finger-tip control with day in and day out operation that approaches perfection is practically like having Perpetual Motion.**

FOR DETAILS SEND FOR RAYMOND BOWL MILLS CATALOG 75 Q

## COMBUSTION ENGINEERING, INC.

Raymond Division

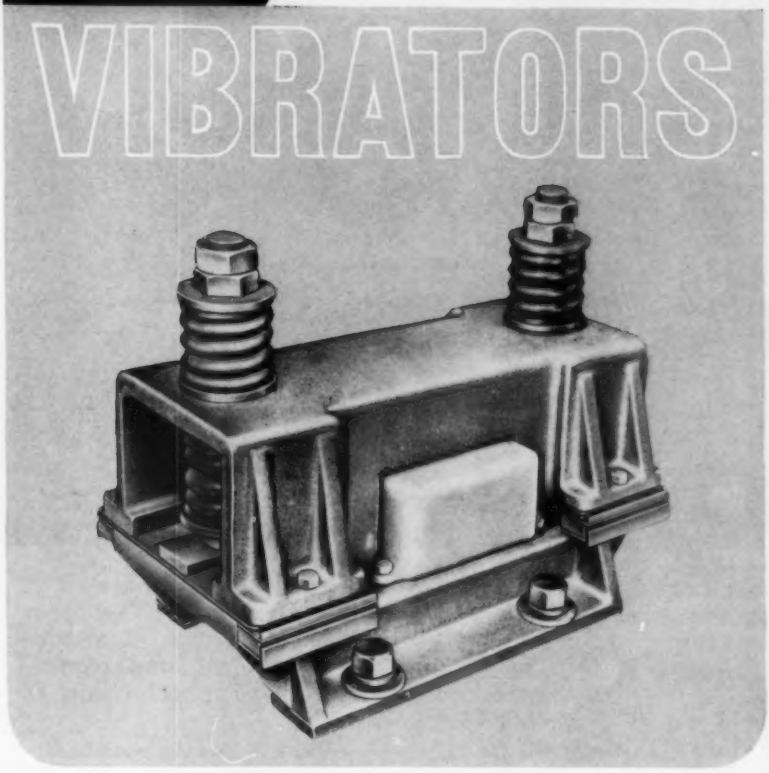
Combustion Engineering-Superheater Ltd.
Montreal, Quebec, Canada

Sales Offices in all Principal Cities

427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS

KEEP BULK MATERIALS FLOWING FREELY

# SYNTRON ELECTRIC VIBRATORS



## ASSURE STEADY MATERIALS FLOW FROM BINS, HOPPERS, CHUTES

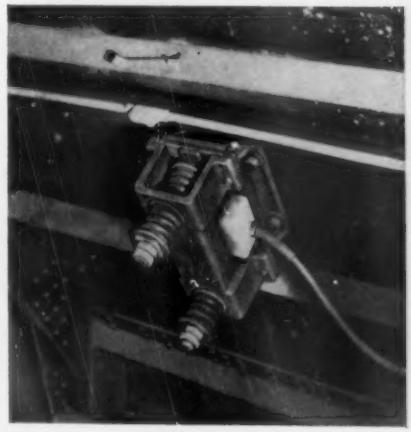
Syntron builds an Electromagnetic Bin Vibrator unit to meet almost every requirement. Prevents most types of bulk materials from arching or plugging in bins, hoppers, and chutes.

The Electromagnetic drive unit produces 3600 instantly controllable vibrations per minute, providing a steady materials flow to processing equipment.

Every Syntron Electromagnetic Bin Vibrator is rugged and durable. The absence of mechanical moving parts assures long, trouble-free service with very little maintenance.

Keep bulk materials flowing efficiently and economically.

Write for a Syntron Catalog and the name of the representative nearest you.



**Write for a Syntron Catalog and the name of the representative nearest you.**

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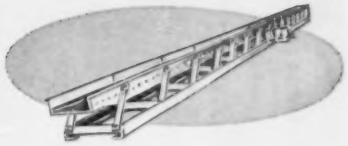
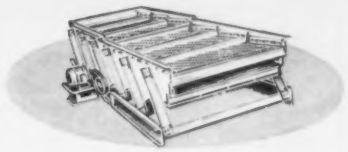
*Other SYNTRON equipment of proven dependable quality*

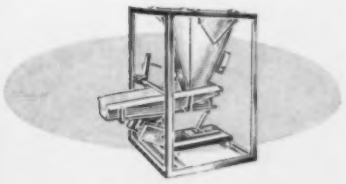


*Mechanical Vibrating Conveyors*

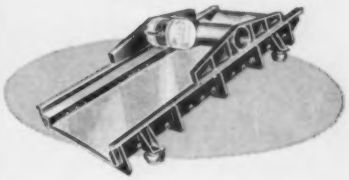


*Mechanical Vibrating Conveyor Screens*

*Gasoline Hammer Rock Drills*



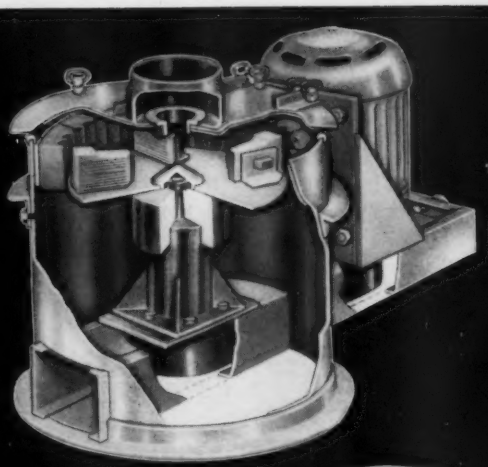
*Dry Feeder Machine*

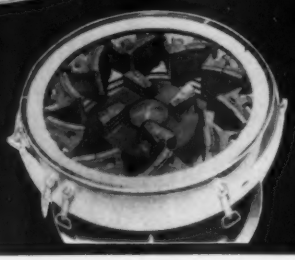


*Vibrating Screens*

**SYNTRON COMPANY**
385 Carson Avenue • Homer City, Pa.

# When Will YOU Crush With The TORNADO?





Hundreds of plants now use the Tornado Square Impact Crusher to turn out a dense graded cubical product, at FAR LESS COST per ton than with rod mills or other types of crushers priced up to TEN TIMES AS MUCH.

Among the reasons why YOU should test the Tornado soon, is its versatility. Produces any range of crushing, to screen to any gradation desired, in an almost unbelievable number of tons per hour.

Virtually no "down time". You can keep it in operation 22½ hours a day, 7 days a week, year after year. Light in weight, requires no massive foundation and little head room. Power requirement amazingly low. No zincing, babbitting, or water cooling needed.

**What this user says is important to you:**

LORAIN ELYRIA SAND COMPANY
840 IDAHO AVENUE
LORAIN, OHIO

Gentlemen:

This is to express our complete satisfaction with the manner in which our Tornado Impact Crusher is operating and, also, with the product it is producing.

As you know, we are extracting an extremely dense aggregate with an unusually low abrasion loss from Lake Erie. To my knowledge, we are the first to reprocess this material through a plant.

We have experimented with other impact crushers and have found that they were unable to produce satisfactory quantities of crushed aggregates at an economical cost. The Tornado is doing the job and giving us a crushed product which easily meets State of Ohio specifications.

I, also, wish to offer my congratulations on the alert way in which your Company's personnel have assisted us in obtaining optimum results.

Cordially,

LORAIN ELYRIA SAND COMPANY

J. A. Couture
Vice President

Write, wire, or phone collect for details. We'll run a sample of your material through the Tornado to PROVE how much it will do for you.

TOM BRIDGEWATER
**WERCO**
**Steel Company**
2151 East 83rd Street, Chicago 17, Ill., Phone ESsex 5-8446, Cable Address, IMPACTOR

# HOW MUCH automation ...and WHEN?

## BAILEY 700 SYSTEMS can help you make sure . . . with step-by-step benefits

Many important—and profitable—improvements in operations can be accomplished with analog and digital computer equipment.

Too much, too soon, however, can be costly—as can too little, too late. Intermediate stages of refinements in measurement and control are desirable and necessary. These not only can produce substantial benefits, but can demonstrate the additional improvements possible with further—or ultimately complete automation. Bailey step-by-step automation assures against loss of prior investment.

Bailey engineers can help you determine optimum usage of *Bailey 700 Analog and Digital Systems* in your operations. They are equipped, by broad experience, to provide single-source responsibility from sensing and measuring instrumentation to complete automation. *Bailey 700 Systems* are installed, in operation, or on order, at locations from coast to coast and throughout the world.

Find out what this Bailey experience can offer you. Contact your Bailey District Office.

### SIX STEPS TO FULL AUTOMATION

**Centralize and simplify information display**—use analog and digital techniques to clarify information, aid operator understanding, improve reliability of interpretation, and save space.

**Extend use of interlocks and limiting circuitry**—use digital solid-state components to extend supervisory controls . . . minimize effects of human error.

**Increase use of automatic sub-loops**—simplify and standardize the starting, controlling, and stopping of major plant components and sub-systems.

**Extend on-line controls**—integrate sub-loops, interlocks, and limiting controls with conventional controls to secure automatic operation over full range, once unit is on the line.

**Provide performance monitoring**—add computing facilities to provide up-to-date calculations for operation improvement and maintenance scheduling.

**Integrate all system elements**—add start-stop control to provide full automation, the ultimate goal.

C159-1

CEMENT DIVISION

**BAILEY METER COMPANY**

1051 IVANHOE ROAD • CLEVELAND 10, OHIO

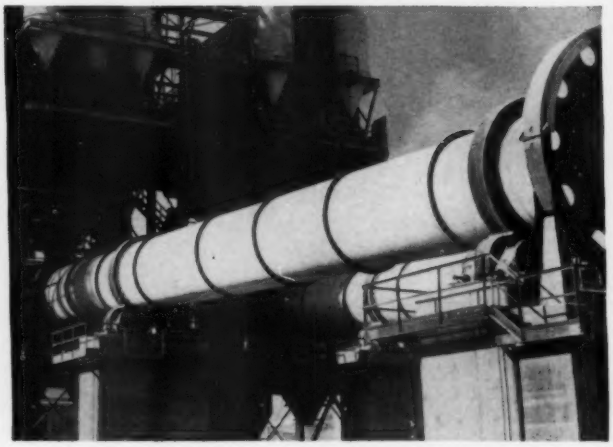
In Canada—Bailey Meter Company Limited, Montreal

# KENNEDY lime plant equipment

## KENNEDY Stone Preheater

Puts kiln exit gases to work to partially calcine feed. The KENNEDY Stone Preheater makes the rotary kiln the most economical producer of high quality lime.

## KENNEDY Short Rotary Kiln

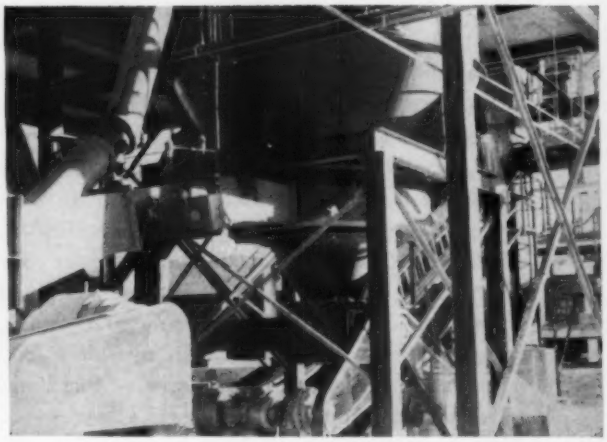


KENNEDY heat-saving auxiliaries make long kilns unnecessary. There is less kiln to buy and maintain; there is less brick — fewer foundations; alignment is simpler.

## KENNEDY Centralized Kiln Control

A single, attractive cubicle houses all instruments essential to system control. Each is factory-assembled and checked to simplify installation and insure efficient overall operation.

## KENNEDY Contact Cooler



Further economies are achieved by the highly efficient transfer of heat from the discharged lime to the combustion air, while rapidly lowering lime temperature. Unit requires little headroom.

*We invite your request for further particulars.*

**KENNEDY VAN SAUN**

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**PIT & QUARRY**
**431 S. Dearborn St. Chicago 5, Ill.**

**September 1961**

# BROADCAST

## *Section*

**POSITION WANTED**

Mining Engineer age 47, 20 years experience mining, quarrying mechanical and processing. Desires position as plant manager or superintendent of rock, sand or mineral processing operation.

**Box No. PQ-184-J, c/o Pit and Quarry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

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Electrical & Mechanical Engineer. 13 years experience in lime manufacture, 4 years in cement, seeks connection with lime, cement or gypsum organization. Plant operation and management experience. Will relocate anywhere in U.S.A.

**Box No. PQ-164-G, c/o Pit and Quarry Publications**
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**Superintendent**
**Crushed Stone Operation**

Nationally known diversified corporation has immediate opening for a superintendent in one of its quarry and bituminous concrete operations.

Experience in this type operation with responsibility for production, maintenance, quality, labor relations, etc. is essential to qualify.

Salary and supplemental benefits program will be commensurate with experience and responsibility. Send complete resume of your experience, education and other qualifications to

**Box No. PQ-178-H, c/o Pit and Quarry Publications**
**431 So. Dearborn St. Chicago 5, Illinois**

# Professional Services

*Quarries*
*Crushing Plants*
*Cement Plants*
*Storage Methods*
*Operating Costs*

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***Consulting Engineers***
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*Design*
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*Plant Layout*
*Appraisals*

**SUPERVISING CHEMIST**

A graduate engineer familiar with Portland Cement chemistry and with the properties of concrete to the extent required to fill the post of supervising chemist. Must also have cement plant operating experience. Ability to read technical German preferred. All replies confidential.

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**Crushed Stone Quarry Operation**

- **Ready Mix and Bituminous Concrete**
- **Precast Pipe and Prestressed Concrete**

Nationally known diversified operation has immediate opening for proven management executive experienced in this field.

The man we seek must have had responsibility for the direction and management of all phases of the business—mining, manufacturing, distribution, purchasing, sales and administration services; as well as ability to promote growth from present $4,000,000 annual sales to its highest potential in active market area.

Salary, and supplemental benefits program will be commensurate with experience and responsibility. Position offers good opportunity for advancement to successful applicant. Send complete resume of your experience, education and other qualifications to:

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**R. L. LOOFBOUROW**
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Site Tests, Plans, Estimates & Supervision for Underground Construction, Mining and Control of Rock and Water

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**CONSULTING ENGINEER**
**PORTLAND CEMENT TECHNOLOGY**

Raw materials deposits. Plant operation. Experimental engineering. Research. Development of plant equipment and processes.

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**for**

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To assume complete charge of Engineering Department, responsible for calculations and design of Rock Crushers, Rod and Ball Mills, Rotary Kilns, Fuel Firing Systems, Plant Layouts.

Location: PENNSYLVANIA.

Salary and Incentive depending on qualifications.

*Send complete resume of experience, education and salary desired, in confidence, to:*

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Cedarapids 4A 2540 primary.
Cedarapids 3B 1036 scalper.
Cedarapids 3C 4024 secondary.
Telsmith 2536 Primary Crushing Plant.
Pioneer 305W Washing & Screening Plant.
Cedarapids #3 Kubit Breaker. Rebuilt.
Cedarapids 3033 Hammermill. Rebuilt.
Cedarapids 2033 Hammermill. Rebuilt.
Cedarapids 1036 plain bearing jaw.
Farrell 8½, 13 x 24 Blake type jaw.
Telsmith 40B secondary gyratory.
Kennedy 37½ Gearless Gyratory. New Condition.
Cedarapids 4024 Roll Crusher. Reconditioned.
2—156KVA, 240-480 V. generator sets, Murphy power.
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Cedarapids 40" x 12'4½" Apron Feeder.
Cedarapids 42" x 10' Apron Feeder.
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8'x12', 8'x18', 12'x22' bins in stock.
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Lorain L-26, ⅝-yd. diesel backhoe.
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Lorain SP-424, 22½-Ton Self-Propelled Crane.
Lorain MC-414, 20-ton Moto-Crane. Reconditioned.
Lorain MC-254, 15-ton Moto-Crane.
Lorain SP-110, 10-Ton Self-Propelled Crane.
Lorain TL-20-MC, moto-crane.

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Caterpillar D-7 with hydraulic angledozer.
Caterpillar D-4 tractor only.

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1—10' x 48" Hardinge ball mill.
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5' x 50', 6½' x 50', 7' x 45' & 8' x 80' dryers.
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St. Regis valve packing machines—#105 & #110.
***We manufacture kilns, coolers, dryers & Lime hydrators.***

**W. P. HEINEKEN, INC.**
*Engrs. & Mfgrs.*
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Permanent career opportunity for qualified engineer experienced in design and operation of aggregate plants, central mix concrete plants, and related materials facilities. East coast location with multi-plant operator.

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## WANTED

Sand Plant Superintendent for large all electric sand plant, using 12" hydraulic dredge, and Eagle processing equipment; must be seasoned, able to train subordinate employees, and make repairs and handle continuous maintenance. Salary commensurate with ability. Submit complete resume.

**EUSTIS SAND COMPANY**
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## WANTED

24" x 36" Jaw Crusher, Second Hand. Good Condition.

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3-Model 16 TDT-23SH Euclid Twin Powered Scrapers, 18 cu. yd. struck, powered by two 671 GMC engines just overhauled, rubber 75%.

**HUME CONSTRUCTION EQUIPMENT, INC.**
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***Phone: 324-2104***

## FOR SALE OR LEASE

DREDGE: 10" portable dredge with 36" cutter head. Powered by Twin 6.71 GMC Diesel. Write for particulars. Pictures sent on request. For sale: 50' conveyor — 24" belt—$1,000.

**MAURICE LORBER**
**Wapello, Iowa — 5347**

## FOR SALE

## AMERICAN HOIST & DERRICK GUY DERRICK

American Hoist and Derrick Company Model 75-100 Steel Guy Derrick and Model T-12S Hoist with 115' Mast Height and 100' Boom, complete with Load Blocks, Torque Converter, Catheads, Gasoline Engine, Weight Indicator and Building for Draw Works and Power Unit (20' x 24' x 10').

The equipment is in good condition and may be inspected at our property. Any reasonable offer will be considered.

*CONTACT*

W. A. BARZ, CALUMET DIVISION

**CALUMET & HECLA, INC.**
CALUMET, MICHIGAN
CALUMET 2000, EXT. 63

## WANTED

## GENERAL SUPERINTENDENT

For sand & gravel plant • Duties charge of production and all maintenance • 20-25 employees • Only experienced man need inquire • References required.

**Box No. PQ-181-J c/o Pit and Quarry**
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40 ton American #408 Diesel Loco. Crane. Cat. D17000 eng. 1943.
25 ton Ind. Brownhoist #5 Diesel Loco. Crane. New 1942.
30/50 ton American Stiffleg Derrick
200 HP American #180 3D elec. hoist and 15 HP Amer. swinger.
65 ton Gen. Elec. 400 HP Diesel Loco.
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1 yd. Lorain L-50 Crane-Drag. 1951.
1600 cfm Chic. Pneu. V-type Compressor.

**WHISLER EQUIPMENT CO.**
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SPECIAL: Link Belt Shovel LS-85 w/Int'l UD18 Diesel Engine

Unit 514 ⅛ yd. Backhoe
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Unit Magnet Crane Mod. 1020
Mod. 120TM Hopto
Bay City Mod. 25 Hoe
5x16 & 4x10 Screen
Athey Loader
D7 Angle Dozer

This equipment rebuilt in our modern plant by expert mechanics. Come See It!

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Experienced cement plant operating man to act as consultant and assist new cement company in operating plant and the selection and training of personnel. Plant is located in foreign, English speaking, country. Three year contract starting on or before January 1, 1962. Send complete resume of experience, education and references. Personal interviews will be arranged.

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Check our **BARGAINS BELOW**

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LARGE STOCKS — IMMEDIATE DELIVERY

## NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Truss Frame Conveyors

8" Jr. I Beam Frame Conveyors

Built Like A Bridge For High Tonnages Clear Spans to 50 Ft. Any Length - Any Belt Width.

Complete Pre-Fab sections of 8" Jr. I-Beam Frame and 30" Deep Truss Frame. Manufactured for quick and easy assembly on the job site. Equipped with 5" diameter troughing idlers and return rolls, 20" diameter head pulley and 16" diameter tail pulley.
Price includes conveyor complete with 4-ply, 28 oz. duck MAJOR BRAND belt with 1/8" x 1/32" rubber covers.
Other lengths priced on request.
**WRITE FOR BULLETINS No. 1138 and No. 1189**

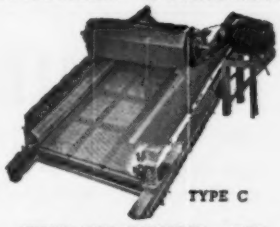
| Belt Width | Conveyor Length | I-Beam Frame Price | Truss Frame Price |
|---|---|---|---|
| 14" | 25' | $ 766 | $ 965 |
| 14" | 50' | 1181 | 1510 |
| 14" | 85' | 1763 | 2273 |
| 16" | 20' | 700 | 875 |
| 16" | 45' | 1128 | 1434 |
| 16" | 60' | 1384 | 1770 |
| 16" | 90' | 1897 | 2442 |
| 18" | 25' | 830 | 1104 |
| 18" | 45' | 1190 | 1573 |
| 18" | 70' | 1641 | 2159 |
| 18" | 100' | 2182 | 2862 |
| 18" | 130' | 2723 | 3565 |
| 20" | 25' | 871 | 1170 |
| 20" | 60' | 1546 | 2016 |
| 20" | 75' | 1836 | 2388 |
| 20" | 90' | 2125 | 2760 |
| 24" | 25' | 922 | 1200 |
| 24" | 45' | 1335 | 1723 |
| 24" | 70' | 1852 | 2377 |
| 24" | 100' | 2473 | 3160 |
| 24" | 120' | 2886 | 3683 |
| 30" | 50' | 1591 | 2018 |
| 30" | 70' | 2054 | 2594 |
| 30" | 90' | 2518 | 3170 |
| 30" | 100' | 2749 | 3459 |
| 36" | 25' | 1105 | 1393 |
| 36" | 45' | 1623 | 2024 |
| 36" | 60' | 2012 | 2497 |
| 36" | 100' | 3048 | 3758 |

## NEW BONDED® HEAVY DUTY MOBILE CONVEYORS

- FAST ECONOMICAL HANDLING OF BULK MATERIAL
- AVAILABLE WITH SCREEN AND FEEDER
- RUGGED 30" DEEP TRUSS FRAME
- HIGH TONNAGE AT LOW COST
- EQUIPPED WITH TOW HITCH

The economical solution to the need for a heavy duty conveyor that can be readily moved from one job-site to another. Available with mast or mastless type undercarriage and hydraulic powered mechanism. All standard conveyor accessories can be used. Lengths to 60 feet and belt widths through 30 inches. **Priced from $2365.00.**

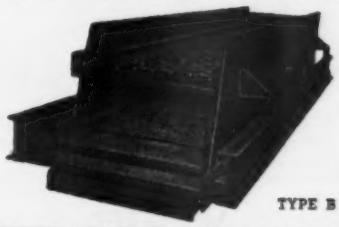
## NEW BONDED® SPECIAL SERVICE & HEAVY DUTY VIBRATING SCREENS



TYPE C

**WRITE FOR BULLETIN #1224**

For scalping middle-range pieces and accurate sizing of fines but where quantity and feed do not warrant a larger capacity, heavy duty model. Medium to heavy construction. Can also be suspended from four steel cables and springs for portable or temporary installation. Vibration remains in working screen body. No shaking of tipple, building or platform. **Priced from $487**



TYPE B

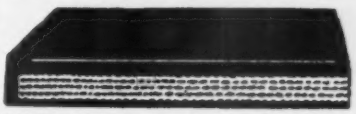
**FACTORY BALANCED, CONTROLLED VIBRATION.** Four bearing, positive throw eccentric shaft. 3' x 6' to 5' x 14'. 1 to 5 decks. **WRITE FOR BULLETIN No. 1087 and "9 REASONS WHY BONDED IS YOUR BEST BUY."**
For high tonnages, heavy scalping and multiple sizing of materials and industrial products. No dead spots. Springless live-rubber mounting of screen body controls vibration. Screen cloth and plate in all models reversible for longer life.
**PRICED FROM ..... $1620.**

## TESTED CONVEYOR BELTING

**WE PAY FREIGHT ON 200 POUNDS AND OVER. QUANTITY DISCOUNTS ON 150' AND OVER.**

**All belting is tested by the Engineering laboratory of one of the largest universities in the United States. It is guaranteed to meet or exceed listed specifications.**

Other widths, plies, duck weights and cover thickness available at low prices.
**WRITE FOR FREE SAMPLE & BULL. #1279**



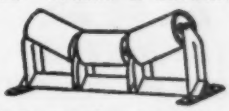
**MAJOR BRAND: 12≠ to 15≠ Friction Pull. 800≠ to 1000≠ Cover Tensile.** Heavy Duty, 28 oz. duck. 1/8" top x 1/32" bottom rubber covers. Tough cotton duck, strong carcass and proper flexibility. Used in moving boxes, bags, coal, sand, gravel, crushed stone, salt, earth and similar materials.

| Width | Ply | U.S. Made Per Foot |
|---|---|---|
| 14" | 4 | $3.06 |
| 16" | 4 | 3.21 |
| 18" | 4 | 3.56 |
| 20" | 4 | 4.11 |
| 24" | 4 | 4.81 |
| 30" | 4 | 5.64 |
| 36" | 4 | 6.69 |

**MAJOR BEE BRAND: 16≠ to 19≠ Friction Pull. 2400≠ to 3000≠ Cover Tensile. Skim Coat Between Plies.** A high grade of heavy duty 28 oz. duck, 1/8" top x 1/32" bottom rubber covers. For severe service and abrasion resistance. For stone, mineral ores, concrete, cement and coal.

| Width | Ply | U.S. Made Per Foot | Imported Belt Per Foot |
|---|---|---|---|
| 14" | 4 | $3.31 | $3.17 |
| 16" | 4 | 3.74 | 3.36 |
| 18" | 4 | 4.14 | 3.73 |
| 20" | 4 | 4.72 | 4.32 |
| 24" | 4 | 5.35 | 4.86 |
| 30" | 4 | 6.56 | 5.98 |
| 36" | 4 | 7.95 | 6.95 |
| 24" | 5 | 6.25 | 5.63 |
| **The Following Have 1/16" Top Rubber Cover x 1/32" Bottom Rubber Cover:** | | | |
| 12" | 3 | | $2.41 |
| 18" | 3 | | 3.23 |
| 24" | 3 | | 4.24 |

## BONDED® IDLERS & RETURN ROLLS



| | | | |
|---|---|---|---|
| 3-roll, 5" diameter Troughing Idlers for: | | | |
| 14" belt | $19.75 | 24" belt | $22.75 |
| 16" belt | 20.50 | 30" belt | 23.85 |
| 18" belt | 21.90 | 36" belt | 24.90 |
| 20" belt | 22.10 | 48" belt | 27.50 |
| 1-roll, 5" diameter Return Rolls for: | | | |
| 14" belt | $ 8.50 | 24" belt | $11.00 |
| 16" belt | 9.00 | 30" belt | 12.50 |
| 18" belt | 9.50 | 36" belt | 13.75 |
| 20" belt | 10.00 | 48" belt | 16.50 |

All steel. Interchangeable with other well-known makes. Furnished with replaceable prelubricated sealed ball bearings. Maintenance is negligible. **WRITE FOR BULLETIN #1138.**

### CHUTE LINING

CHUTE LINING is of high-tensile, abrasion-resisting quality. Recommended for Chute and Launder Lining, Conveyor Belt Scrapers, Conveyor Skirt Boards, Die-Press or Bumper Stock Hoppers, Bins and other metal surfaces exposed to the action of abrasion materials.

## BONDED SCALE AND MACHINE COMPANY

**PHONE Days: Hickory 4-2186** **WRITE FOR FREE CATALOG AND PRICES** **PHONE Evenings: AX. 1-2213 or BEImont 7-7728**

**110 BELLEVUE** **Mfrs. of Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers, Feeders and Bucket Elevators** **COLUMBUS 7, OHIO**

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## LIQUIDATION SALE
## COMPLETE SLAG & CRUSHING PLANT
## LOCATED IN CLEVELAND, OHIO

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**BUCKET ELEVATORS**

1—65′ high, chain type, 6″ x 10″ buckets
1—55′ high, continuous, belt type, 10″ x 16″ buckets

**CONVEYORS—ALL TYPES**

2—16″ x 15′ screw feeders
1—24″ x 40′, steel apron, complete structural
1—48″ x 13′-6″, magnetic, 30″ dia. pulley
1—20″ x 80′, trough belt, 7½ HP
1—24″ x 40′, trough belt, 5 HP
2—30″ x 50′ trough belt, 10 HP
1—30″ x 168′, trough belt, 100 HP
1—30″ x 237′, trough belt, 100 HP

**CRUSHERS**

1—Symons 4′ short head, course bowl & liner, 150 HP with controls, Ser. #4953.
1—Symons 4′ standard, fine bowl & liner, 100 HP & controls, Ser. #4392.
1—Double roll, 48″ wide x 36″ dia. rolls, 100 HP motor.

**HOPPERS & STORAGE BINS**

4—150 tons capacity, 2-compartment, O.D. 16′ x 20′ x 27′ high.
1—375 tons capacity, cylindrical, cement bin.
2—100 tons Aggregate bins with batch hoppers & scales.
1—375 tons capacity, 5-compartment.
2—50 & 100 tons capacity, with batch hoppers & scales.

**SCREENS**

2—Tyler "Ty-Rocks" Model F-600, 4′x14′, 3 deck
1—Tyler "Ty-Rock" Model F-600, 4′x14′ 2 deck
1—Tyler "Hummer" 4′x8′, single deck, 3 vibrators

# AAA
## MACHINERY & EQUIPMENT COMPANY
**10900 Cedar Road**
**Cleveland 6, Ohio**
**SW 1-3900** **Mr. Edward Richman**

## FOR SALE
### P & H Shovel

P & H Model 1055 Standard Shovel. Serial No. 16730 with 3⅛ C.Y. Bucket. Powered by Caterpillar D-375 Diesel Engine, 86 inch track pads. 1,000 hours since upper works overhauled, zero time since lower works overhauled. Machine is in good operating condition.

**Price—As is, Where is—$45,000.00**

Located in Colorado

**C. F. LYTLE, INC.**
**1923 Geneva Street, Sioux City, Iowa**
**Phone: 8-5585**

## FOR SALE
**25 yd. Bucyrus-Erie Electric Dragline**
**WILLIAM LUBRECHT, III**
**CONSTRUCTION EQUIPMENT**
**311 W. Diamond Ave.** **Hazleton, Pa.**
*Telephone Gladstone 5-4041—5-0253*

Cat D 337 Power Unit, complete radiator to clutch shaft Completely rebuilt by Cat Dealer. Price **$2,900.**

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**Ashtabula, Ohio** **Phone 993-2129**

SWAP $75,000 FLORIDA PROPERTY FOR EQUIVALENT IN QUARRY MACHINERY

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50-Ton Whitcomb Diesel Electric Locomotive. Serial No. 61095, Type 0-4-4-0, 56½″ Gauge. Powered by Hercules DFXC Engines, 5¼″ x 6″. Clean and in Excellent Condition. Located Sparrows Point, Maryland.

**PRICE** .....**$20,000.00**

**THE MARYLAND SLAG CO.**
**501 St. Paul Place** **Baltimore 2, Md.**

## FOR SALE

1 Simplicity two surface Shaker Screen 4′x10′
1 Simplicity two surface Shaker Screen 4′x10′
1 Simplicity single surface Shaker Screen 4′x14′
1 Simplicity single surface Screen 4′x10′
1 Webster Rotary 60″ Gravel Screen
1 Esco Drag Bucket 6½ yards, serial No. 30123 in excellent shape
1 Bucyrus Erie Drag Line class 24, machine No. 887, 100 ft. boom, 4 cu. yard Drag Bucket, with 200 horse electric motor on hoist and drag, 75 horse motor on swing, all electric.

**ELWOOD SALES & MFG. CO.**
**500 N. 6th St.** **Lafayette, Indiana**

**SAUERMAN** 2½ Cy. Dragscraper, 2-drum roller brg. Hoist, bucket, mast, five blocks. 125 hp. dustproof motor. Good. $8000.

**UNIVERSAL 3240 JAW CRUSHER** w/42x20 Manganese feeder, electric motors. Good. $16,500. With 5x10 Pioneer Mesabi grizzly. $19,250.

**DIAMOND** 77 Portable Gravel Plant w/1036 Jaw, feeder, 36x24 roll, 4x12 screen, rotovator, conveyors, 6-110 GM diesel, tandem rubber, 5 yrs. old. $18,500.

**UNIVERSAL** 293Q Portable Gravel & Rock Plant w/1824 rb. Jaw, apron feeder, grizzly, twin dual rolls 24x14 & 24x16, 3x10 2½-deck screen, rotovator, Cat. diesel, conveyor, tandem rubber. New 1955, good. $18,500. Martinsville, N. J. Terms. Cap. 100 tph 1″ minus.

**UNIVERSAL** 293Q Portable Plant w/1824 Jaw, feeder, 3020 hammermill, 3x10 screen, rotovator, power, tandem rubber. $12,500.

**CEDARAPIDS** 1824 Jaw Portable w/feeder, conveyor, power, tandem rubber. 90% new. $10,500 Carlsbad, N. M.

**JAW CRUSHERS:** Pioneer 2036 rb., late mdl. $4500 Rogers 1824 rb, excellent. $2750.

**VIBRATING SCREENS:** Simplicity 3x10 2-deck, excellent. $1000 Simplicity 4x12 2-deck excellent. $1750 Cedarapids 3x8 2-deck flat, good. $1150 Cedarapids 3½x10 2-deck flat, good. $1500 Cedarapids 4x8 3-deck, inclined. $1000 Seco 5x8 3-deck, good. $1350 Diamond 4x10 2-deck, good. $1150.

**ELECTRIC SHOVELS,** Bucyrus 120B w/6 cy. bucket, just rebuilt. $37,500 Bucyrus 54B, new 1951, just rebuilt. $26,500 Marion 43M tunnel shovel, new 1950, good. $11,000.

**SHOVEL FRONTS** for P&H 655 B, complete w/deck mchy., new. $3750 N.W. 6 w/deck mchy, like new. $5750 Lima 34 chain crowd. $500 P&H 255A, good. $750 Unit 1020, like new. $750.

**COMPRESSORS:** Ingersoll 600 Rotary portable w/671 GM diesel, good. $5500 Jaeger 315 cfm portable diesel, rebuilt. $300 mo. $2850 Davey 210 cfm portable diesel rebuilt. $250 mo. $2250.

**SCHRAMM ROTO DRILL** #TRDR-55 w/125′ compressor on International FAR300 Tractor, like new, 1/3rd price. $7500.

**PORTABLE SURGE BINS,** Cedarapids 5 cy. w/30″ belt, motor, on rubber. $2350. Also shopmade unit $1356.

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## 22-TON REAR DUMPS
***EXCELLENT OPERATING CONDITION***

**FIVE - 46TD's**
**FIVE - 38TD's**
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**HIBBING, MINNESOTA**
**Phone: AM 3-7507**

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2—Bonnot rotary kilns, 8′ x 115′, complete with motors and drives and all auxiliary equipment, ⅝″ material.

1—Bonnot steel rotary cooler, 8′ x 50′, complete with drive and motor, ⅝″ material.

**R. GELB & SONS, INC.**
**U. S. Highway 22** **Union, N. J.**
**Murdock 6-4900**

## WANTED
## 48" CONVEYOR

Complete up to 250 ft. or any components, 5 ply or equal belt, anti-friction bearings, 60 troughing idlers, 24 return, head and tail ends take-up, reducer, 440 motor 100 HP. Must be good condition, subject to inspection. Write, wire or phone—

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3—GM Model 12—567A diesel engines direct connected to G.E., Westinghouse and Allis-Chalmers generators on steel sub-bases with exciters, switch gear, radiation generators, 2400 volts, beautiful condition.....$39,600.00 ea.

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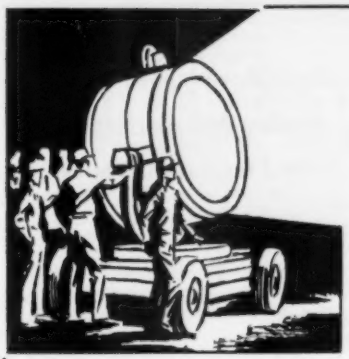

# AAA LIQUIDATION SALE

# RINGWOOD MINE

## RINGWOOD, NEW JERSEY

**Air Compressors**
2—I R. Type XRE, 1500 CFM, 300 HP with controls.
4—Westinghouse Type 4-YC, 7½ HP with controls.
1—CP Model D880, Portable, Diesel Engine, 315 CFM.
1—Worthington Type HXE, Portable Gas Engine, 315 CFM.

**Ball Mill**
1—Hardinge 8' x 22", 150 HP with controls, 4 Ton of 3" Balls and Parts.

**Belt Conveyors—**
**Will sell components as follows:**
500—Trough Idlers 20", 24", 30" and 36" all 6" Dia.
200—Return Idlers 20", 24", 30" and 36" all 6" Dia.
4000'—Belting 4-5 and 6 ply 20", 24", 30" and 36".
20—Head Pulleys for above Belts 24" and 30" Dia.
20—Tail Pulleys for above Belts 20" and 24" Dia.
20—U.S. Syncro and Link Belt Drives 3, 5, 10, and 20 HP.
2—"Transportometers," for 24" & 30" Belts. 80 & 120 TPH at 200 FPM.
1—Rex Belt Tripper, Automatic and Reversing 24".

**Belt Conveyors Magnetic**
1—36" x 25' with Dings 36" x 32" Pulley.
4—30" x 8' with Dings 42" x 30" Cobber Pulley.
8—36" x 14' with Dings 42" x 36" Crockett Separator, Stainless Steel incased, filled with oil, type AHM.

**Buckets—Grab & Scraper**
1—Blaw-Knox, Size 736, Cap. 3½ Cu. Yd.
1—Blaw-Knox, Size 734, Cap. 3 Cu. Yd.
2—Amco 48" Scrapper.
3—Amco 36" Scrapper.
1—Amco 60" Scrapper (Unused).
1—Koehring Dipper, ¾ Yd., with arms for No. 304 Shovel (Unused).

**Cable & Wire—(Unused)**
2—Rolls—Bethlehem 1⅛" Dia., 6 x 21, 4200' each roll.
2—Rolls—Anaconda #2/0 trolley wire 6000'.
1—Roll—Bethlehem ⅞" Dia., 6 x 19, 500'.
1—Roll—G.E., 3 Conductor, lead covered, 500'.

**Cars—Mine**
15—Granby—94 Cu. Ft., side dump (Unused).
15—Grandy—75 Cu. Ft., side dump.

**Classifiers**
3—Dorr Duplex 4' x 25', Type DSFH.

**Cranes**
1—Euclid 20 Ton Cap. 30' Span, 45' Lift, 3-Motor. AC Voltage, Modern.
1—Link Belt Crawler, 1½ Yd., Clam Bucket, Ser. 1837.

**Crushers**
1—Telsmith Model 10-B, 1¼" openings, Cap. 38 to 44 TPH, 30 HP, Ser. 1504.
1—Birdsboro Buchanan, Type C, Jaw, Size 30" x 42", 100 HP, Ser. 1092.
1—AJO—Taylor 60" Dia. x 18", 2—100 HP with Controls.
1—Penn. 24" x 24", Single Roll.
1—Symons, 4' Short Head Cone crusher, Course Bowl. 125 HP Motor.

**Drills—Drifter—Stopehammer—Grinders**
2—IR, DA—35, on 9' shells.
14—IR, DA—35 on 4' shells.
6—IR, JA—55 Jack Hammers.
6—IR, JR—38 Jack Hammers.
23—IR, P-48 Stope Hammers.
1—IR, Size JA—3, Air Grinder for Bits.

**Dust Collector**
1—AAF "Roto-Cone" No. 36, Type W, 30,000 CFM, 75 HP With Controls.

**Hoists**
1—Nordberg—Double Drum, 6' Dia. x 66" Face. 1000 RPM of 16,000 lbs. line pull drum, Cap. 4-450 1⅛" cable. 500 HP 3-60-2300 Volts. All controls.
1—Belmont Double Drum. 300 HP-3-60-2300 Volts. All controls.
1—Lidgerwood, single drum, 8' Dia. x 4' Face. G. E. 150 HP.
1—Link Belt Slope Hoist, Side D-20, 48" x 48" Drum. 700' 1" Cable.

**Hydro—Separators**
2—Dorr, Type A, 8' x 4' Deep. 1½ HP, S/N 7861, 7860.

**Hoists & Slushers—Air**
6—IR, Model EUA, 1000 lbs. cap.
1—Joy Double Drum, Model EP 113-33, 50 HP.
3—Joy Double Drum, Model EP 113-38, 30 HP.
2—Joy Double Drum, Model EP 110-115, 15 HP.
1—Joy Triple Drum, 30 HP.

**Laboratory Equipment**
1—Sturtevant Jaw Crusher, Size 6" x ½" opening.
1—Sturtevant Roll Crusher, Size 5" x 7".
1—Sturtevant #339 Disc Grinder, 10" Dia.
1—Lot of Miscellaneous, comprising complete lab., Tables, Glassware, Scales, Furnaces, etc.

**Locomotives**
2—G. E. Diesel Electrics, 60 Ton, 425 HP, Cooper-Bessemer Engine. S/N 13142 and 15091.
4—G. E. Electric Mine Type, Model IME204-A6, 4 ton Cap. 36 Gauge.

**Machine Shop Equipment**
1—Toledo 2" High Speed Pipe Threader and Cutter.
1—Williams 6" Pipe Threader & Cutter.
1—Acme Bolt Threader, Model BB-2793.
1—Saunders Threader & Cutter.
1—Shumaker Lathe, 34" x 12'.
3—Wilson Arc Welders, 250 and 400 AMPS.
1—Aurora Drill Press.

**Miscellaneous**
1—Crocker Wheeler 50 KWMG 75 HP.
1—G. E. 6 KWMG Set. 10 HP.
1—Elmco Mucking Machine No 21. 36 Gauge.
1—Broughton Mixer, 54" L x 48" W x 28" D.
1—Large Lot of miscellaneous supply items. Valves, pipe, drill bits, cable, wire, sheeves, bearings, starters, etc. Approximately $50,000 replacement inventory including spare parts. (All unused.)

**Pumps—Centrifugal**
3—IR Model 1½ CNT6, 200 GPM, 75 Hp.
2—IR Model A, 300 GPM, 230' Head, 30 Hp.
2—IR Model A, 200 GPM, 430' Head, 40 Hp.
1—IR Model A, 200 GPM, 230' Head, 20 Hp.
1—IR Model B, 50 GPM, 130' Head, 3 Hp.
1—Deming Deep Well, 8 Stage, Figure 4700, No. 12, 100 Hp.
1—Deming, 8", 2500 GPM, 160' Head, 150 Hp.
1—Worthington, 8", 2500 GPM, 160' Head, 150 Hp.
2—Worthington, Model 5-LG-1, 8", 100 Hp.
1—Worthington, 4-Stage, 35 Hp.

**Pumps—Sand**
2—Wilfley, 1", Model CA, 5 Hp.
2—Wilfley, 2", Model CA, 7½ Hp.
7—Wilfley, 3", Model CA, 20, 25, 30, & 40 Hp.
3—Wilfley, 4", Model CA, 20, 25, & 30 Hp.
1—Wilfley, 8", Model CA, 100 Hp.
1—Linatex, 3", Model M., 200 GPM, 40' Head.

**Railroad Track**
1500 Tons—80, 90 & 100 lb. relaying rails. Including all accessories.

**Screens—Vibrating**
3—Tyler "Ty-Rocks" 5' x 12', Double Deck, type 600, with Fines Hoppers, 10 Hp.
7—Tyler "Hummers", 4' x 5', Type 38, Single Deck, wet or dry.
1—Tyler "Hummer" 4' x 6', Single Deck.
1—Tyler "Hummer" 3' x 5', Single Deck.
1—Tyler "Hummer", 2' x 4', Single Deck.

**Sizer**
1—Dorr Fahrenwald, Type EX-8, 8-Pocket, S/N US7864.

**Tables—Concentrating**
8—Deister Triplex—Plateau Deck—4RH, and 4LH, Intermediate, 2 Hp.
16—Deister Simplex—Plateau Deck—4RH, and 4LH Coarse, 2 Hp.

**Thickeners**
2—Dorr 30' Dia. Type AX Mechanism.
1—Dorr 80' Dia. S/N 457865.

**Transformers**
2—Wagner, 1500 KVA, 33,000/2300 Volts.
1—Westinghouse, 300 KVA, 2400/480 Volts.
2—Allis Chalmers, 200 KVA, 2400/480 Volts.
3—Westinghouse, 150 KVA, 4800/2400, 480/240/120 Volts.
3—G. E., 50 KVA, 2500/120 Volts.
3—Westinghouse, 37.5 KVA, 2200/440 Volts.
3—Westinghouse, 37.5 KVA, 2400/240/120 Volts.
22—Miscellaneous Transformers, 5-10-15-20 and 25 KVA.

**Vacuum Filter**
1—Dorr Continuous 10' x 5' Face, 155 Sq. Ft. Filter area, with 40 Hp. vacuum pump, cap. 40 TPH.

**Weightometer**
1—Merrick Model "E", 20" Belt, S/N 423.

**LIQUIDATION OFFICE:**

# AAA MACHINERY & EQUIPMENT CO.

**MINING MACHINERY DIVISION — P. O. BOX 158**

**PHONE: YOrk 2-7028** **RINGWOOD, NEW JERSEY**

*JUST A 50 MINUTE DRIVE FROM NEW YORK CITY.*

## AMERICA'S LARGEST STOCK—

## Rotary Dryers & Kilns

10' x 11' x 175' Vulcan Kiln, 13/16"
10' x 8' x 125' kiln, 5/8" shell
10' x 78' National dryers, 3/4"
9' x 30' Link-Belt dryer
8'6" x 70' Bartlett dryers, 5/8" welded
8' x 60' kiln, 1/2" welded
8' x 60' Davenport, 7/16" welded
7'6" x 62" kiln, 1/2" welded
7' x 120' kiln, 5/8" welded
7' x 110' kiln, 5/8" shell
6' x 7' x 100' kiln, 1/2" shell
6' x 150' kiln, 5/8" welded
6' x 60' Louisville steam-tube
6' x 50' Louisville dryer
6' x 40' Bonnot dryer, 1/2" shell
6' x 18' Link-Belt Roto-Louvre dryer
5' x 30' Louisville rot. dryer
4'9" x 32' dryers, 3/8" shell
4'6" x 40' Hardinge rot. dryer
4'6" Louisville rot. dryer
4' x 30' Hardinge steam-tube
3' x 23' Standard Steel dryer, 1/4"

### *MILLS*

Hardinge 8' x 48" conical pebble
Hardinge 7' x 36" conical pebble
Allis-Chalmers 6' x 18' pebble-tube
Allis-Chalmers 6' x 16' ball-tube
Allis-Chalmers 6' x 12' rod mill, 125 HP
Allis-Chalmers 5' x 22' ball-tube
Bonnot 5' x 10' ball, 75 HP
Denver 4' x 10' rod mill, 60 HP

### *CRUSHERS — PULVERIZERS*

Symons 2' standard cone crusher
Symons 2' shorthead cone crusher
Symons 4' shorthead cone crusher
Allis-Chalmers #322 hydracone
Farrel 36" x 15" jaw crushers
Buchanan 24" x 13" jaw, 50 HP
Farrel 20" x 6" jaw, 30 HP
Mitchell 18" x 9" jaw, 25 HP
Babcock & Wilcox #32E ball type pulv.
Raymond 50", 5-roller, hi-side mill with Dbl. whizzer sep., oil journals, etc.
Raymond 66", 6-roller hi-side mill
Dixie #5060 hammermill, 500 HP
Amer. #38-S rolling ring crusher
Wms. 36 x 24 hammermill, 50 HP

**PERRY EQUIPMENT CORPORATION**
**1414 N. Sixth St. Phila. 22, Pa.**
**POplar 3-3505**

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3—10'x78' Dryers—2'3'4'5½'7' Symons and Telsmith Cone Crushers—3648-4042-4872 Jaw Crushers and smaller sizes—48" & 20" Gyratory Vibrating Feeders—other types of Feeders—Eagle Fine & Coarse Material Washers—Dixie Non Clog moving plate Hammermills—Asphalt Plants—Jaw—Cone—Gyratory—Roll Double and Triple—Hammermill and Impact Crushers—Ball—Rod—Tube Mills—Screening, Washing and Crushing Plants, Classifiers, Compressors, Conveyors, Cranes, Drills, Dump Cars, Dredges, Feeders, Hoists, Motors, Generators, Kilns, Dryers, Locomotives, Pumps, Screens, Shovels, Draglines, Transformers, Euclid Trucks.

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**MOTORS AND GENERATORS**
All sizes, new and rebuilt. Starters, accessories, pulleys and repair parts. Gear motors, Falk Shaft mounted Speed Reducers, couplings and V-belt drives.
**EXPERT REPAIR SERVICE**
**NUSSBAUM ELECTRIC CO.**
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5—600 CFM portable rotary type compressors, I.R. and C.P. Diesel driven. Late models. On pneu. tires.
5—365 CFM C.P. rotary compressors. Diesel driven. On pneu. tires. Late models. PRICED RIGHT.
Complete line compressors—105 CFM to 600 CFM.

**EQUIPMENT CORPORATION OF AMERICA**
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**FOR SALE**

2—Used Syntron Electric Vibrators Model V-200, Complete with Controller. $150.00 each. F.O.B. Cleveland, Ohio

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**Cement Mill Machinery**
***from Tennessee Location***

Allis Chalmers equipment for entire raw and finishing departments. Capacity 4000 Barrels per day. Mills and Separators may be purchased separately.

Two 7' x 22' Mills (two compartment)
One 9'6" x 10' Preliminator Ball Mill
Three 7' x 22' Mills (single compartment)

Each of these Mills have Meehanite Liners and are directly coupled to 400 HP Motors, operated in closed circuit with Three 14' Raymond DOUBLE WHIZZER Mechanical Air Separators NEW in 1950, each V Belted to 75 H.P. Motor: Also Bucket Elevators, Conveyors etc.

***TO ARRANGE INSPECTION WRITE, WIRE or PHONE COLLECT***

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**FIRST MACHINERY CORP.**
**209-289 TENTH STREET**
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**RAYMOND HI SIDE MILL**

New in 1951. Model 5048 with 4 rollers. Can be converted to five rollers. Has fans, single whizzer, air separator, late style feeder. All motors.

*In Our Stock*

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123 Townsend St. · San Francisco 7, Calif.

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## FOR SALE

1—Complete Portable Crushing Unit
Primary Unit
24" x 36" Jaw
36" x 12' Apron Feeder
30" Delivery Conveyor
Secondary Unit
40' x 39" Hammermill
4' x 12' Double Deck Screen
2 Delivery Conveyor
Power Mounted on Unit
1—Link Belt LS85 Shovel 1 yd.
1—Complete Dragline Boom & Bucket (New)
40 ft. Sectional Koehring Boom
1 yd. Bucket
1—Koehring 304 Shovel ¾ yd.
1—Koehring 304 Shovel 1 yd.
1—Iowa Mfg. Pug Mill (Single Shaft)
1—Gardner Denver Compressor WBK 4006 Powered by 13000 Caterpillar Motor
1—Chicago Pneumatic D-70 Wagon Drill
2—Chicago Pneumatic Compressor 323 CP Powered by GM Diesel LA 6-110 62403
1—Hobart Generator P6108 52 amp 6.3 KVA 120 Volt 1 phase

Other miscellaneous quarry equipment too numerous to mention.

For further information, please contact:

**E. I. SARGENT QUARRIES, INC.**
2525 West Euclid Avenue Des Moines, Iowa

# ROCK PRODUCTS EQPT. DIV.

8'x60'x½" Welded Rotary Kiln
6x120'x½" Vulcan Rotary Kiln
4'x35' Rotary Dryer. New Shell
4'x47'x5/16" Mosser Rotary Dryer
6'x25'; 6'x50' Louisville Rotary Dryers
3'x3'x12' Horiz.; 4'x9'x12' Vert. Pluggers
27"x24" Komarek Greaves Briquet Presses
8'x11' Traylor Ball Mill. Steel Lined
7'x24' Allis Chalmers Tube Mill
#5060 Dixie Mogul Hammermill
SX13 Penna Hammermills, 400 HP
Heil Patterson Crusher, 100 HP
Raymond #50 & #40 Impact Mills
36"x42" Koppers 2 Roll Crushers
36"x48"; 20"x6" Jaw Crushers
30"x96"; 40"x84"; 60"x84" Screens
535'—24" Troughing Belt Conveyor
Bucket Elevators 45' to 90' Centers
100 Steel Tanks, 1000 to 350,000 gal.

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MU 7-5280

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## 18" BELT—$2.89

626 ft. roll 4 ply 28 oz., 1/8" x 1/32", factory fresh, 2500-3000# cover tensile, 16-19# friction pull. Also, all sizes 14" to 30" from stock in 4 & 5 ply.

**PALTECH CO.**
NEW CANAAN, CONN. WO 6-4126

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54" x 70" Bird CENTRIFUGE
Univ. 293Q, CR2236, Pioneer 24V, Univ. 880 Jr. 2036 Port. Crushing, Noble CA506 Auto Batch & 100 ton Asphalt PLANTS.
CRUSHERS: 9 x 8, 1536, 2036, 2436, 4042, 4248, 6684 JAW, 322 & 6K Allis, 25½ & 37½ KVS, 16", 2' 4", 3' & 4' Traylor GYR. 36S & 48S Telsmith CONES. Sgl. & Dbl. ROLLS.
6000' h/d 42" Conveyor BELTING
1236' Rope Belt CONVEYOR. 24" x 50' troughing. Two-24" x 30' McLanahan dbl. LOG WASHERS
5 x 17 & 5 x 21 Rotary DRYERS or COOLERS
MILLS: 5060 Dixie, Penna SXT14 Hammer. CR 2020 Impactor. #50 Raymond Imp. 4 x 11 Rod, 5 x 9 Ball, Bradley Jr. & Sr. 5057 Raymond Roll. 2½ yd 24" ga. Dump Cars, GE 25 ton diesel elect. LOCOMOTIVES (2)
SHOVELS: NW 25, 80D. Link Belt LS51, 85, 98. Manitowoc 2000B, 3500, 4500. Marion 7200. Bucyrus 38B, 51B, 54B, 71B. Lorain ¾ yd.

**MID-CONTINENT EQUIPMENT CO., INC.**
8321 Gannon, St. Louis 32, Mo., Wydown 1-2826

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# LIQUIDATIONS

1—Raymond #73612 Super High Side 6 Roll Mill, 8' dia. whizzer, complete.
1—Raymond #6669 Super High Side 6 Roll Mill with Flash Drying System, 7' dia. whizzer, complete.
1—Raymond #5047 High Side 4 Roll Mill, 5'6" dia. whizzer, complete.
1—#1 Raymond Impact Pulverizer, 5' dia. whizzer, complete.

**AIR SEPARATORS**
2—Raymond 16' and 14' dia. single whizzer.
2—Sturtevant 14' dia. with 75 HP motors.

**KILNS & DRYERS**
1—Vulcan 8' x 125' Rotary Kiln, ⅜" shell.
2—Vulcan 7' x 110' Rotary Kilns, ⅝" shell.
1—Vulcan 8' x 80' Rotary Dryer, ½" shell.
1—Vulcan 7' x 80' Rotary Dryer, ½" shell.
2—Fuller 6'6" x 60' Rotary Dryers, ½" shell.
2—Vulcan 5½' x 4½' x 60' Rotary Dryers, ⅜" shell.

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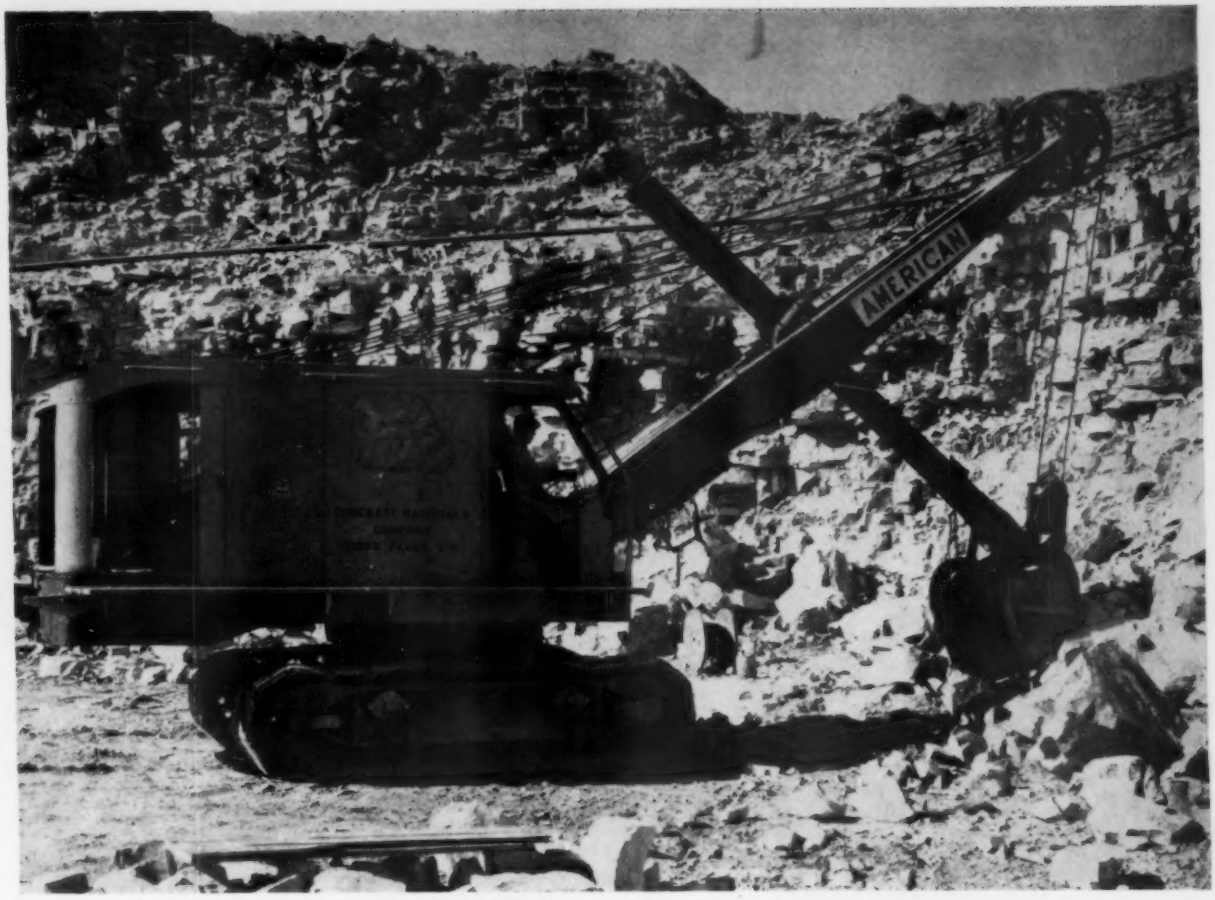


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*Arnold Abbrot, with over 20 years' experience with the Kaiser Company, supervises the Kaiser Radum plant, one of the industry's most modern and efficient. Plant handles a feed of 1200-1300 TPH rock, gravel and sand.*

# KAISER specified WEMCO for RADUM plant

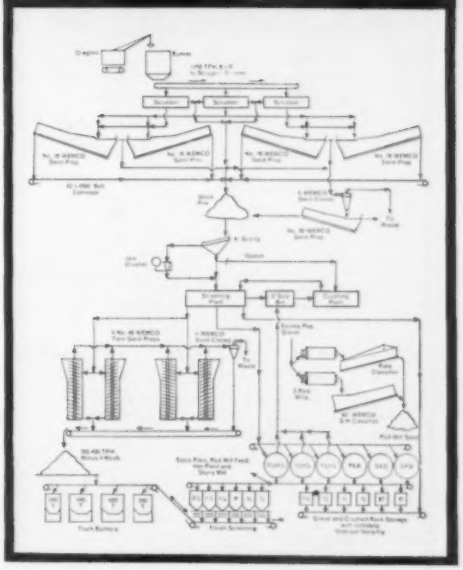
## *Maximum efficiency in equipment— and operation—pays dividends*

Since it first began production in 1930, the Kaiser Radum Plant, in Pleasanton, California, has had a continuous record of successful operation. Capable management, a progressive program of modernization and expansion have made it one of the industry's largest—and most efficient.

Because of its record of outstanding, profitable performance in major aggregate plants, WEMCO equipment was selected for modernization of this 1200-1300 TPH sand and gravel plant. Four #78 WEMCO Sand-Preps receive material from scrubber section. Four #48 Sand-Preps wash and classify all #4 minus concrete sand (350-400 TPH). A #60 WEMCO Sand-Classifier (installed in 1952) handles rod mill discharge. Eight WEMCO Sand-Clones process Sand-Prep overflow water for recovery of fine sands.

High capacity trouble-free WEMCO equipment combined with Kaiser's advanced production, flexible handling and blending techniques, enable the Radum Plant to meet even the most recent specifications and the demands of a highly competitive market.

Another example of WEMCO and the Industry's forward-looking companies working together for the future. A WEMCO engineer can provide answers to your aggregate problems. Better quality . . . greater profits.



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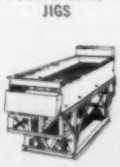

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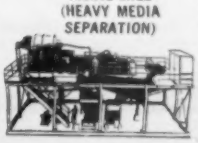

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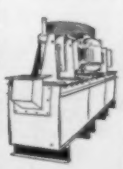

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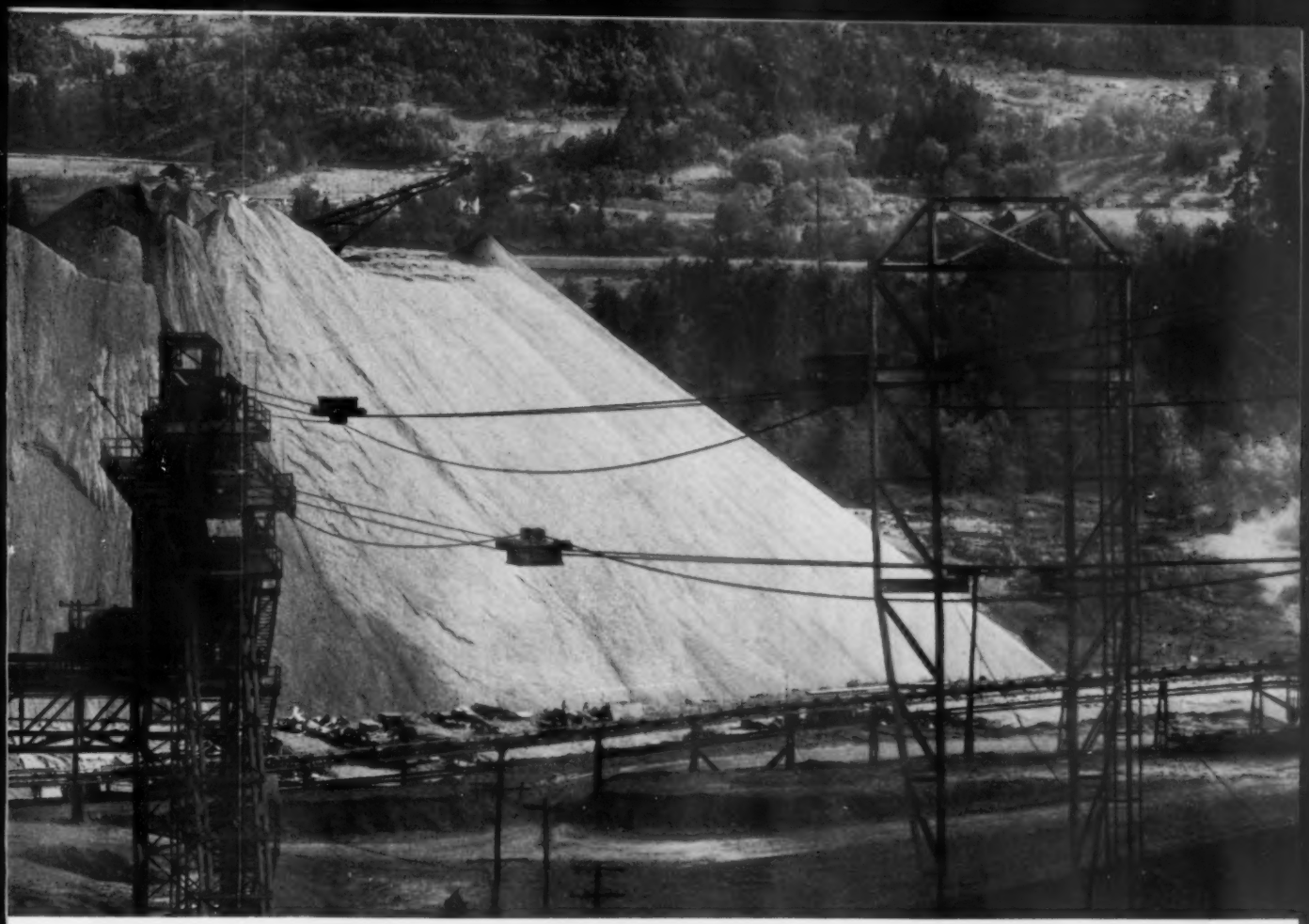


# Aerial tramway moves a million tons of ore every year

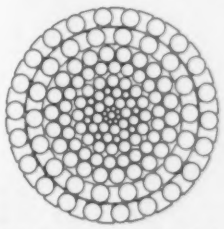
### 2½-ton capacity ore cars ride smoothly on Bethlehem track strand

In a rugged section of Oregon's Coast Range, The Hanna Mining Company works the only nickel mine now operating in the United States. On top of Nickel Mountain the ore body lies right on the surface; the open-cut mining method is used.

It's 8,300 ft from the loading terminal at the upper level to the smelter stockpile at the foot of the mountain and there's a drop of some 2,000 ft in elevation. A continuous aerial tramway was selected as the most economical way to move the crushed ore downhill over this difficult terrain. The tramway is equipped with 63 ore cars which carry 2½ tons each. Rated capacity is 250 tons per hour, feeding over a million tons a year to the smelter.

### 50,000 ft of large track strand and wire rope used

Unlike a monocable aerial tramway, the ore cars ride on *two* pairs of Bethlehem track ropes. The upper pair is 2-in. diameter strand, while the lower is 1½-in. diameter locked-coil track strand. This type of track strand has a smooth surface for the carriage wheels, holding vibration to a minimum as the tram car runs over it. It is designed to resist bending and crushing stresses, too, and takes abrasion remarkably well. Altogether, 16,920 ft of each size strand is involved, as well as 16,640 ft of 2-in. diameter Bethlehem Purple Strand wire rope for haulage lines.



Half-locked coil strand is designed to be flexible, yet strong. The 2-in.-diam strand has a minimum breaking strength of 218 tons.

If you would like to know more about wire rope for aerial tramways, simply get in touch with the nearest Bethlehem sales office. They'll be glad to give you full details.

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*There's a distributor of Bethlehem Rope near you, supplied by our nationwide network of wire rope mill depots.*

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*REPLACE WITH*

# THE BROAD H-R LINE

*fast delivery*
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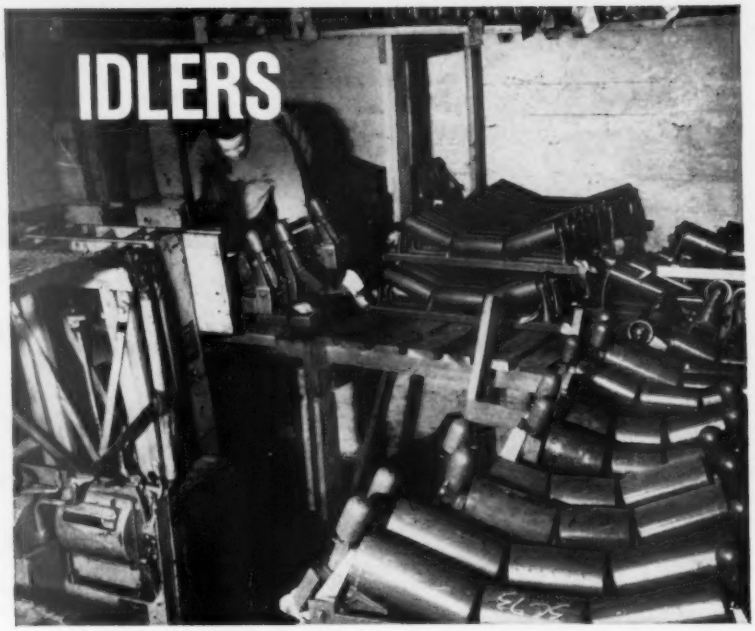


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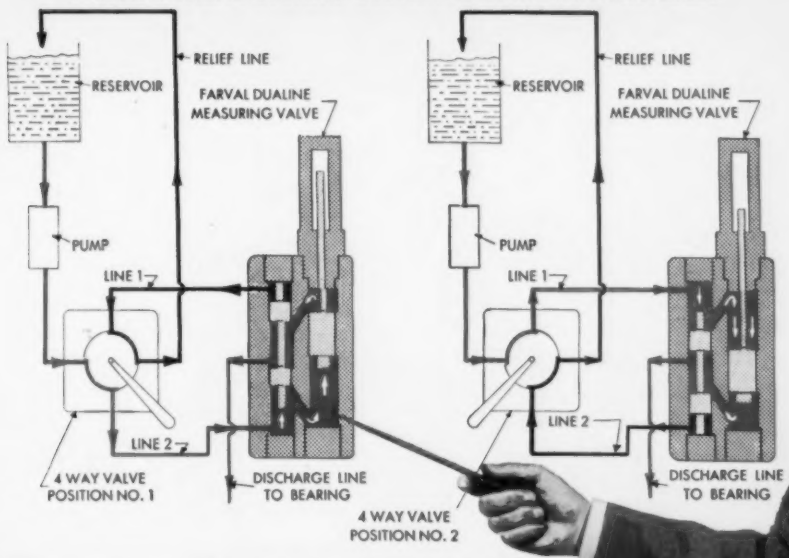


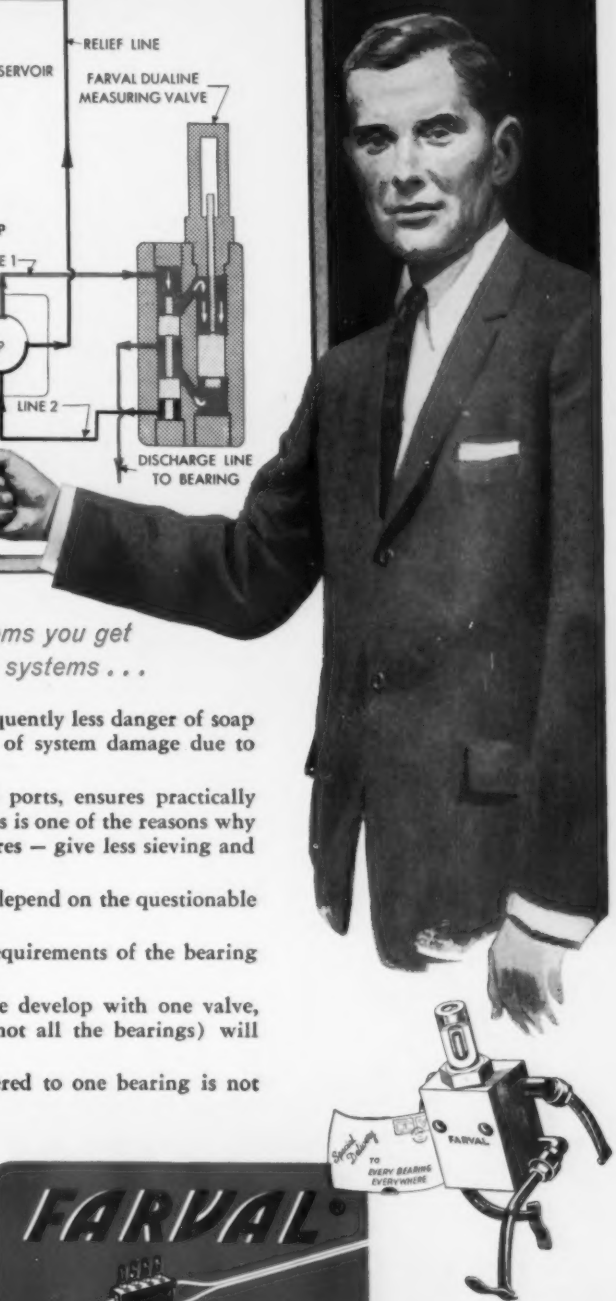

*With Farval Dualine centralized lubricating systems you get the following distinct advantages over other type systems . . .*

(a) Much lower operating pressures with consequently less danger of soap separation on grease systems. Also, less danger of system damage due to high lubricant pressures.

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(e) Independent metering valve operation. Should trouble develop with one valve, the system will continue to operate. Only one bearing (not all the bearings) will require hand lubrication until trouble is corrected.

(f) True lubricant metering. Quantity of lubricant delivered to one bearing is not dependent on any other valve in the system.

(g) Much easier to spot and correct trouble.

Check with your Farval Representative and see how these versatile systems can improve production operations — reduce costs. Or write for free Bulletin 26-T containing complete engineering information on Farval Dualine systems.




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**Eaton Manufacturing Company**
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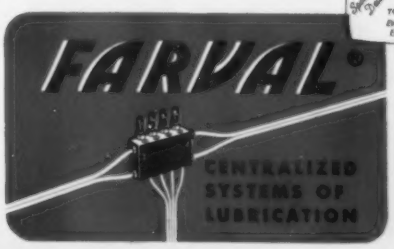


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